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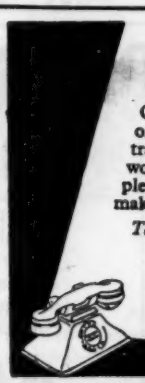

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ORIGINAL ARTICLES

CAPILLARY FRAGILITY

A CRITICAL ANALYSIS

BY G. H. BELL, B.Sc., M.B. Glasg.
S. LAZARUS, M.D. Glasg., M.R.C.P., F.R.F.P.S.G.
AND H. N. MUNRO, B.Sc., M.B. Glasg.

(*From the Institute of Physiology, University of Glasgow*)

TYPICAL scurvy is very rare in this country, but minor degrees of vitamin-C deficiency may be relatively common. The symptoms of subclinical scurvy are vague and unspecific, and reliance has therefore to be placed on various objective tests to establish the diagnosis. Methods of assessing nutrition with reference to vitamin C are based either on the amount of ascorbic acid in the blood and urine or on the capillary fragility or resistance, as shown by subjecting the skin capillaries either to suction pressure or to the back pressure of venous obstruction and then counting the number of hæmorrhages produced. The method of determining the capillary fragility put forward by Göthlin (1931) appealed to us for several reasons: (1) a large amount of work has already been done in Scandinavia by Göthlin and his pupils using this test; (2) the test can readily be applied to several people at the same time, and (3) the essential part of the apparatus, a sphygmomanometer, is readily available. A test so simple as the determination of the capillary fragility would have an assured place in clinical work if the range of normality were known and a causal relationship between lack of vitamin C and increased capillary fragility were established. Serious doubts, however, have been raised about the validity of this relationship. We therefore attempted to standardise the conditions necessary for the performance of Göthlin's test; to determine the variations in the capillary fragility in a large group of healthy people and to define the range of normality; and to determine the effect of the ingestion of vitamin C on people considered to have an increased capillary fragility.

METHOD OF DETERMINING CAPILLARY FRAGILITY

If the pressure in the capillaries is increased artificially above the normal—i.e., above 15–30 mm. Hg—there is a tendency for small hæmorrhages to develop in the skin. The number of these hæmorrhages occurring under standard conditions is taken as an index of the capillary fragility or resistance. Göthlin's method makes use of this principle. We adopted his method as follows. A circle 6 cm. in diameter was marked out on the antecubital fossa of the subject, the skin in the area was examined, and any blemishes resembling petechiæ were marked with ink. The subjects were seated at a table resting their arms on it at heart level. Sphygmomanometer bags were wrapped round the upper arms, the lower edge of the bags being kept at least an inch above the circle. The bags were connected to a mercury manometer and to a large football bladder placed in a letter-press. The pressure in the system was raised to 50 mm. Hg and accurately maintained for 15 min. at that value by adjustment of the letter-press. The procedure caused very little discomfort. After the pressure had been released and the skin allowed to return to its normal colour, the petechiæ were counted by two of us independently, and the average of the findings was recorded as the true result. A 300 watt lamp, 2 ft. from the arm, was used for the inspection of the antecubital fossa, and the room was kept at a comfortable temperature.

RESULTS

The subjects of this experiment were all students in the Institute of Physiology of the University of Glasgow during the sessions 1937–38 and 1938–39. Their average age was 20; 84·7% of them were males, but no distinction as to sex was made at this stage in tabulating the results. Most of them (87%) were living at home.

Frequency distribution of petechiæ in normal subjects.—In the first 81 cases (series I) the arms were inspected for petechiæ with a 60 W lamp. The histogram (fig. 1) shows that 59% of the students had no petechiæ. It was suspected that some petechiæ had been missed owing to inadequate lighting, and it was therefore decided to use a 300 W lamp during the rest of the investigation. These 81 cases of series I have only been used as a means of testing the effect of lighting, and unless otherwise stated are excluded from the results given below. The main series (series II) consisted of 346 students. The distribution of petechiæ is given in the histogram (fig. 2). Since the curve is very skew, it is

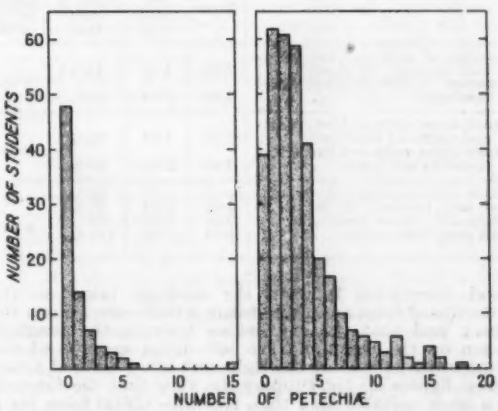

FIG. 1 FIG. 2

1—Distribution of the number of petechiæ in the antecubital fossæ of 81 students when a 60 W lamp was used for inspection.
2—Distribution of the number of petechiæ in the antecubital fossæ of 346 students when a 300 W lamp was used.

evident that the mode—i.e., 2 petechiæ—is a more representative value than the mean. The mean value of the number of petechiæ is 3·50, with a standard deviation of 3·31.

Correlation between the capillary fragility taken on each arm.—In series II the capillary fragility in each subject was taken from a single arm or from the average of two arms when both were examined. It was observed that the number of petechiæ often differed in the two arms of a single person; these differences were often greater than 3. Göthlin (1931) said that the differences were seldom greater than 3 when the capillary strength was normal. In 166 subjects the test was performed on both arms at the same time. In the right arm the mean number of petechiæ was 4·37, with a standard deviation of 5·52, whereas in the left arm the mean was 4·49, with a standard deviation of 4·12. The correlation coefficient was 0·66, with a standard error of 0·078, assuming zero correlation. This correlation between the number of petechiæ on the right and left arms is significant.

There is a considerable difference between the mean numbers of petechiæ in the whole group (series II) and the smaller double-arm group. The double-arm group was not a random sample and contained a greater percentage of cases with high capillary fragility than did series II.

Correlation between the capillary fragility found on two different areas of the forearm.—It has been suggested by several workers that the skin over the antecubital fossa is unsuitable for a capillary-fragility test. Wright and Lilienfeld (1936), using pressure in the armlet midway between the systolic and diastolic blood-pressure to produce skin petechiæ, say that the results obtained at the elbow are capricious, and they recommend an area farther down the forearm. In a series of 32 cases (series III) we mapped out on both forearms a circle of 6 cm. diameter

with its centre over the antecubital fossa exactly as before and another circle of 6 cm. diameter touching the previous one and with its centre 6 cm. below the antecubital fold. These circles will be called proximal and distal respectively. Petechial counts were made in all four areas after maintaining a pressure of 50 mm. Hg for 15 min. The readings in the proximal circles were consistently higher than those in the distal circles, but there was a definite relationship between them. This was seen both when the average of the proximal readings—i.e., right and left arms—was compared with the average of the distal readings and when single proximal readings were compared with single distal readings. The details of the correlation are given in table I, which shows a very

TABLE I—COMPARISON OF THE CAPILLARY FRAGILITY OF TWO AREAS TAKEN ON EACH ARM OF 32 PEOPLE (SERIES III)

—	Mean	Standard deviation	Coefficient of variation	Correlation coefficient
Average of right and left proximal readings (32 cases) ..	5·44	4·08	75%	0·92
Average of right and left distal readings	3·03	2·18	72%	
Single arms, right and left, proximal circle (64 readings) ..	5·22	4·78	92%	0·90
Single arms, right and left, distal circle (64 readings)	2·67	2·53	95%	
Right arm, proximal circle ..	5·56	5·00	90%	0·50
Left arm, proximal circle ..	4·86	4·53	93%	
Right arm, distal circle	2·59	2·26	87%	0·45
Left arm, distal circle	2·59	2·80	108%	

good correlation between the readings taken in the antecubital fossa and those taken a little lower down the arm; and that the correlation between the readings taken on the right and the left distal areas is of the same order as that of the right and left proximal areas. These figures do not support the view that the forearm is a more suitable area than the antecubital fossa for a test of capillary fragility. At the same time, it is realised that the local skin conditions have an influence on capillary fragility, because considerable differences in the petechial counts in corresponding areas of right and left arms are occasionally found, and because different areas on one arm give consistently different counts.

Effect of ingestion of vitamin C on capillary fragility.—Large doses of vitamin C were given to 35 subjects in series II after their capillary fragility had been estimated; 28 were given two tablets of Redoxon, each containing 50 mg. of ascorbic acid, twice daily for ten days (a total of 2 g. of ascorbic acid); the remaining 7 took two oranges a day for ten days. The capillary fragility was estimated again four days after the course of treatment—i.e., fourteen days after the first test. The effect of this treatment is shown in table II. Of the 21 cases with original values of 8 or more petechiæ the vitamin treatment was followed by a reduction to values of 8 or under in 16 cases. In the 14 cases showing originally less that 8 petechiæ vitamin C had no effect on the number of petechiæ. In those who had 7 petechiæ or less the mean difference, having regard to sign, after treatment is −0·214 (insignificant), whereas in those who had 8 or more petechiæ it is −5·428; the difference between the mean differences is 5·214, with a standard error of 2·302. The reduction in petechial count brought about by treatment with vitamin C is thus statistically significant.

In our series of 346 cases we found 5 who, with an initial count above 8 and no response to the first treatment with ascorbic acid, were found to resist a further ten days' course of 200 mg. of vitamin C daily. This dose of ascorbic acid is sufficient to raise the amount of ascorbic acid in the plasma considerably (see below); indeed in 1 of these 5 cases the amount of ascorbic acid in the plasma was raised from 0·66 mg. to 1·94 mg. per 100 c.cm., which means that in this case at least there was no lack of absorption. These 5 students appeared to be suitable subjects for a trial of vitamin P, which has been postulated as an additional factor necessary for the health of the capillaries. Large doses of vitamin P (Hesperidin Glaxo 1 g. daily for ten days) were given, without, however, producing any significant change in the capillary fragility. This seems to be the only reported group of healthy people with an increased capillary fragility resistant to treatment with vitamin C in whom the effect of vitamin P has been studied.

It is known that the capillary fragility in any individual is not constant throughout the year. According to Gedda (1931) it is lowest in the autumn and highest in the spring. Greene (1934), working with children, has suggested that the capillary fragility is not reasonably constant even over a shorter time. Molitch (1935) selected from a number of boys one group which showed 0–4 petechiæ and another group which showed over 8 petechiæ at a first test. He retested them at intervals of one or more months and found in almost every instance that they again fell into their original groups. To have a series for comparison with our treated subjects we examined 30 students on two or more occasions at intervals of a fortnight during which there was no change in the diet. It was found necessary to exclude 3 subjects from this comparison series; these were women on whom the first count was carried out at or near the menstrual period. The second counts made fourteen days later were very much lower. The relation of this change to the menstrual cycle was demonstrated by a third estimation performed at the next menstrual period, which showed again a high petechial count. The effect of menstruation on capillary fragility has previously been noted by Stephan (1921). The data from the remaining 27 cases are given in table III.

On comparing the two groups summarised in table II and table III the following values are found:—

Table II mean difference	−3·342
Table III mean difference	−1·926
Difference of mean differences	1·416
Estimated standard deviation	9·871
Standard error	2·528

$t = 0·56$ $P = 0·6–0·7$

TABLE II—EFFECT OF VITAMIN C ON CAPILLARY FRAGILITY OF 35 STUDENTS

TABLE III—RESULTS OF CAPILLARY-FRAGILITY TESTS CARRIED OUT IN ABSENCE OF TREATMENT AT INTERVAL OF 14 DAYS

II				III	
Initial petechial count	Petechial counts after treatment	Initial petechial count	Petechial counts after treatment	Initial reading	Readings 14 days later
2	4, 3, 2, 1, 0	11	15, 3, 2	0	0, 1, 5, 6
3	5, 3	12	8	1	0, 4
4	5	13	6, 3	2	1, 1, 2, 3, 4, 8
5	5, 3	14	6	3	0, 6, 8
6	4, 4	15	7, 5, 5	4	1, 4
7	7, 7	19	8	5	2, 5, 6, 6, 7
8	1, 1	30	40	8	8, 8
9	15, 9, 6	36	5	19	15
10	17, 7, 5			27	18
				80	17

A consideration of the data presented here will show that the subject who began with 80 petechiæ is a most exceptional case. If this case is omitted, the following values are obtained:—

Table II mean difference	−3·342
Table III mean difference	+0·423
Difference of mean differences	3·765
Estimated standard deviations	5·782
Standard error	1·497

$t = 2·515$ $P = 0·02—0·01$

This means that the administration of vitamin C produced a reduction in the petechial counts as compared with a group in which no ascorbic acid was administered. It is shown statistically, omitting the 1 very unusual case, that this is unlikely to be a chance result.

CAPILLARY FRAGILITY AND THE ASCORBIC ACID IN THE BLOOD

To determine if the dose of ascorbic acid that we used was adequate, the ascorbic acid in the blood was estimated in 17 cases by the method of Pijoan and Klemperer (1937). The average value before treatment was

0·56 mg. per 100 c.cm. of plasma, whereas after treatment the average value was 1·07 mg. per 100 c.cm. The dose of vitamin C used was therefore sufficient to increase the amount of ascorbic acid in the plasma. In a small group of cases showing a moderate range of capillary fragility there appeared to be no correlation between the capillary fragility and the amount of ascorbic acid in the plasma. Thus 13 people with petechial counts below 8 had an average of 0·56 mg. of ascorbic acid per 100 c.cm. of plasma, and 8 people with petechial counts above 8 showed an average of 0·56 mg. per 100 c.cm.

COMMENTS

Many of the investigators who have used Göthlin's method have emphasised the importance of standardising the conditions under which the test is performed. The importance of standardising the source of light is clearly indicated by comparing fig. 1 with fig. 2; the increase in illumination from 60 W to 300 W has shifted the distribution curve to the right. It is possible that, if a more refined method of observing the petechiæ were used—e.g., by lens—the curve might be moved still farther to the right. This does not indicate the need for increased refinement of the method but emphasises the necessity for keeping the conditions standard and for knowing the normal range of variation under these conditions.

Even when the conditions are carefully standardised there still remains a difficulty in assessing the capillary fragility of the subject. Variation in the values found on the right and left arms of a single individual are often found. In the series of 166 cases and in the series of 32 cases a fair correlation between the numbers of petechiæ on the two arms was found. Nevertheless in the examination of a single individual the average of the petechial count on both arms appears to give a more accurate indication of the true capillary fragility, because there is, as can easily be seen from table I, less scatter of results. A statistical investigation of Göthlin's test by Geschwind and Rundqvist (1935) has led Göthlin to make all determinations on both arms and to proceed from the mean figure of the two determinations (Göthlin 1937).

TABLE IV—RELATION OF AMOUNT OF CITRUS FRUITS IN THE DIET TO CAPILLARY FRAGILITY

—	Poor diet	Adequate diet	Very good diet	Total
Total students ..	92	144	103	339
With high fragility	11 (11·95%)	11 (7·64%)	7 (6·80%)	29 (8·55%)

Göthlin (1931) says that "for healthy members of the Nordic race" over 8 petechiæ represents a definite increase in capillary fragility. Our results appear to give some support to this view: only 10·7% of our 346 cases had 8 or more petechiæ; further, only cases with 8 or more petechiæ were significantly affected by ingestion of vitamin C.

In our main series (346 cases) an attempt was made to correlate the capillary fragility with the stated intake of citrus fruit. The students were questioned at the time of the test about the amount of citrus food that they took, and they were classified thus: "adequate" means one orange or half a grape-fruit daily, "very good" means more than that amount daily, and "poor" means a very small consumption of fruit. The number of students in each dietetic group and the number of these showing 8 or more petechiæ are shown in table IV. It gives a $\chi^2 = 1{\cdot}927$ with $P = 0{\cdot}3$–$0{\cdot}5$, which is not a significant correlation. The 5 students who did not respond to the ingestion of vitamin C are not included in table IV, because their increased capillary fragility is undoubtedly not related to vitamin C. A group of 9 students volunteered to leave off taking fruit for a month. No significant change in the number of petechiæ was noted as a result. The average number of petechiæ before the test period was 3·1, whereas after the test period it was 3·9.

Living in lodgings made no significant difference in the incidence of high petechial counts. Of the 46 living in lodgings 7 (15·2%) had 8 or more petechiæ, and 23 (7·7%) of 300 students living at home had 8 or more petechiæ. The difference is 7·5% with a standard error of 5·5.

CONCLUSIONS

It is impossible to lay down any rigid dividing line between normal and abnormal capillary fragility. If the test is carried out as described, a petechial count below 8 can be regarded as normal, whereas 8 or more petechiæ would be an unusual number requiring further investigation. In women near the menstrual period the petechial count may be temporarily raised. A repetition of the test a fortnight later will allow one to decide whether the increased capillary fragility is associated with menstruation. In men, and in women where the influence of menstruation has been excluded, the test should be repeated after an intensive course of vitamin C. If the petechial count is then considerably reduced, it seems permissible to assume that the previous high reading was due to lack of vitamin C. There will always remain some few apparently healthy people (about a quarter of all those showing high capillary fragility) in whom high petechial counts are unaffected by the administration of vitamin C or any other factors so far known.

SUMMARY

(1) The fragility of the capillaries of the skin of the antecubital fossa was examined by Göthlin's method in a series of 346 healthy British students.

(2) Variations in the illumination alter the mean number of petechiæ detected. A 300 W lamp at a distance of 2 ft. proved to be a good standard illuminant.

(3) Petechial counts of under 8 were found in 89·3% of cases. Under the conditions of the test 8 petechiæ or more may be regarded as unusual; this agrees with the opinion reached by Göthlin as the result of his work on Scandinavians.

(4) In most cases where the petechial count was 8 or over the ingestion of vitamin C reduced the petechial count to less than 8 in two weeks. The ingestion of vitamin C has no effect on petechial counts below 8.

(5) The antecubital fossa was found to be as suitable as the forearm for this test.

(6) There are a few healthy persons (5 in 346) with increased capillary fragility which is not influenced by the administration of vitamin C or of vitamin P.

(7) Apart from abnormal influences—e.g., fever, administration of heavy metals—two factors influence capillary fragility in health: menstruation and ascorbic acid. The present study suggests that other factors are involved.

We wish to thank Dr. P. L. McKinlay for help in the statistical treatment of our data; Messrs. Roche Products Ltd. for a supply of Redoxon; Messrs. Glaxo Laboratories Ltd. for a supply of Hesperidin; and our students for their coöperation.

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Dr. A. S. M. Macgregor, medical officer of health for Glasgow, speaking at the opening of the Greenock Central Coöperative Society's new dairy premises, congratulated the society on their enterprise and said that the plant was the most modern he had ever inspected. He was much impressed with its spaciousness which was so essential in any plant dealing with food for human consumption. In his opinion milk could not be safely purveyed to communities of the size of Greenock, unless it were pasteurised. He was able to say that 80% of the milk pasteurised in Glasgow was pasteurised to his satisfaction. The result had been a great diminution in the incidence of infectious diseases and particularly of tuberculosis in children.

EXCRETION OF PREGNANDIOL IN TOXÆMIA OF PREGNANCY

BY CUTHBERT LESLIE COPE, D.M. Oxfd, F.R.C.P.

(From the Nuffield Department of Medicine in the University of Oxford)

THE sterol compound called pregnandiol was first isolated from pregnancy urine in 1929 by Marrian. When, five years later, Butenandt determined its formula, the close similarity in structure to progesterone led him to suggest that pregnandiol might be an excretory end product of progesterone metabolism in man. More recently a great increase in knowledge of the significance of this substance has been made by Browne, Henry and Venning, who, having first shown that pregnandiol was excreted almost entirely as a compound with glucuronic acid, developed a relatively simple method of estimating this in urine (Venning 1937). By the application of this method the following points have been established :—

(1) Pregnandiol glucuronidate is excreted in progressively increasing amounts during pregnancy but disappears abruptly from the urine a few days after delivery (Venning 1938, Wilson and Randall 1938).

(2) The compound is present in the urine in smaller quantity during part or the whole of the luteal phase of the menstrual cycle but is absent during the first half of the intermenstrual period (Venning and Browne 1937, Cope 1940).

(3) In early human pregnancy it can be made to disappear from the urine by excision of the corpus luteum (Cope 1940, Jones and Weil 1938).

(4) It is not present in the urine at any time in secondary amenorrhœa (Cope 1940).

(5) Injection of sufficiently large doses of progesterone leads to the appearance of a variable amount of pregnandiol glucuronidate in the urine (Venning and Browne 1937, Cope 1940).

From these facts it is deduced that the presence of pregnandiol glucuronidate in the urine is a sign of active progesterone metabolism. In the menstrual cycle and during early pregnancy this progesterone is probably formed by the corpus luteum, but there is evidence that after the third month of pregnancy progesterone is derived mainly if not entirely from the placenta. The excretion of pregnandiol thus promises to be a valuable index to abnormalities of progesterone metabolism both in the menstrual cycle and throughout pregnancy, and it has been suggested (Wilson and Randall 1939) that, if pregnandiol is found in the urine of a woman who has missed a period, pregnancy may be diagnosed with reasonable certainty, after it has been ascertained that this pregnandiol is not the normal prelude to a fresh menstrual period.

TOXÆMIA OF PREGNANCY

It has been reported that in toxæmia of pregnancy the relatively large amounts of pregnandiol glucuronidate which should normally be present in pregnancy urine are either greatly diminished or entirely lacking. If this is true, not only does it provide a possible clue to a metabolic derangement in such toxæmia, but also it must influence our developing views of the diagnostic significance of pregnandiol estimations during pregnancy.

Weil (1938) reported the excretion of very small amounts of pregnandiol glucuronidate in late toxæmia of pregnancy and said that in all severe pre-eclamptic cases he could not recover any of the compound from the urine. Browne, Henry, and Venning (1938) also reported that only a small amount of pregnandiol glucuronidate was excreted in late toxæmias of pregnancy, although in no case was it completely absent. Unfortunately Weil published no figures in support of his statement, and Browne, Henry and Venning only a single one.

Stover and Pratt (1939) reported the recovery of 13·2 mg. of pregnandiol glucuronidate a day in the urine of a woman with toxæmia of pregnancy, but the value of this isolated figure is greatly diminished by the fact that Stover and Pratt found in normal pregnancy amounts considerably below those found by other workers. Venning (1938) has found that in the last month of pregnancy the excretion of pregnandiol glucuronidate varies in different people from 60 to 105 mg. a day (expressed as pregnandiol) with a mean figure of 75 mg. The highest figure recorded for late pregnancy by Stover and Pratt is, however, only 18 mg. a day; hence their finding of 13·2 mg. in a single case of toxæmia of pregnancy cannot be compared with the results of other workers.

In a series of normal pregnancies I have found 30–90 mg. of pregnandiol excreted daily as glucuronidate in the last month, the mean figure being 55 mg. Although these figures are lower than Venning's, they agree well with those of Wilson and Randall (1938), who found a mean daily excretion of 53·8 mg. in the last month of pregnancy.

I consider it unwise to conclude that any difference which may be found between the rates of excretion of pregnandiol in normal pregnancies and in pregnancy toxæmia is necessarily due to the toxæmia, for the excretion of pregnandiol might be interfered with in many conditions of ill health other than toxæmia. We have therefore compared the daily excretion-rate of pregnandiol glucuronidate in late toxæmia of pregnancy with that of women having other general diseases of quite different type late in pregnancy.

All the cases of pregnancy toxæmia had not only a persistent albuminuria but also a raised blood-pressure with or without œdema, and one woman had severe eclamptic fits. No case of recognised chronic nephritis nor any in which the blood-pressure was known to have been raised before the pregnancy, has been included in this group. The findings are given in table I, which shows

TABLE I—EXCRETION OF PREGNANDIOL IN LATE TOXÆMIA OF PREGNANCY

Case	Age	Para.	Blood-pressure	Albumin in urine (mg. per 100 c.cm.)	Œdema	Blood-urea	Weeks pregnant	Pregnandiol (mg./day)	Remarks
1	29	0	140/80	200	0	—	36	32·4	Mild toxæmia
2	20	0	170/110	300	+ +	—	34	33·4	Toxæmia
3	24	0	170/110	750	+ +	36	38	40·4	Eclamptic fits
4	28	0	160/104	30	±	27	35	43·2	Toxæmia
5	24	0	160/90	80	+	24	38	55·8	,,
6	32	2	160/100	30	+	—	37	36·6	,,
7	31	1	170/115	700	+	—	36	28·5	,,
8	39	6	180/110	60	+	—	35	51·7	,,
9	29	2	160/95	80	±	—	35	33·8	,,
10	19	1	170/120	60	±	—	39	38·0	Toxæmia *
						Mean....	36	39·4	

* Eclampsia previous pregnancy.

that in none of these cases was the excretion very low, and that even in the woman suffering from eclamptic fits the excretion-rate was not below the lower limit of our normal series. Certainly pregnandiol was never completely absent, as it was in the cases studied by Weil. The mean excretion-rate of the compound, expressed in terms of free pregnandiol, was 39·4 mg. a day.

The findings in the pregnant women with other diseases are shown in table II. Although in this group the excretion-rates were much more variable, the mean value—49·5 mg. a day—was essentially the same as in our normal series. It was rather higher than the mean of the toxæmic group, but the difference is not large enough to be of undoubted significance.

Since neither Weil (1938) nor Browne, Henry and Venning (1938) published any clinical details of the cases on which they based their claim, the possibility cannot be excluded that these cases were not true uncomplicated toxæmias. With this in mind I have investigated two further cases.

The first of these was a woman suffering from essential hypertension with a blood-pressure of about 150/100, rising during her first pregnancy to 180/120 and during her second to 210/115. In the thirtieth week of this second pregnancy there were slight œdema of the hands and ankles, 10–30 mg. of albumin per 100 c.cm. in the urine, and a blood-urea of 27 mg. per 100 c.cm. The renal function was not reduced, and there

TABLE II—EXCRETION OF PREGNANDIOL IN NON-TOXÆMIC CONDITIONS IN LATE PREGNANCY

Case	Age	Para.	Blood-pressure	Albumin in urine	Weeks pregnant	Pregnandiol (mg./day)	Remarks
1	39	3	136/70	0	32	46·0	Hypochromic anæmia Hb. 40%
2	37	1	100/60	trace	34	84·0	Pyelitis
3	28	1	110/70	0	39	70·5	Hydramnios
4	31	2	90/60	0	26	20·8	Cardiac failure
5	38	5	116/84	0	39	54·2	"
6	37	6	130/80	0	32	36·0	"
7	33	3	120/80	0	37	30·2	Cerebral thrombosis (hemiplegia)
8	33	0	125/70	0	29	63·8	Syphilis
9	30	2	115/80	0	33	53·4	Diabetes mellitus
10	26	0	130/80	trace	39	36·4	Pyelitis
					Mean....34	49·5	

were no urinary casts. The excretion of pregnandiol at this time was 27·2 mg. a day, a lower figure than any in the group of uncomplicated toxæmias.

The second case was a woman who, after an attack of "renal disease" at sixteen, had become a recognised chronic nephritic and was seen in the thirty-ninth week of her second pregnancy, when she was twenty-four. The urine contained 200–450 mg. of albumin per 100 c.cm. and many hyaline but no granular casts. The blood-urea was 34 mg. per 100 c.cm. and the blood-pressure 140/85. She did not concentrate urea to more than 1 per cent. in the urine, and a urea-clearance test indicated a renal function of about 40 per cent. of normal. She had no œdema. Two separate 24-hour collections of urine did not show any trace of pregnandiol glucuronidate, and attempts to isolate free pregnandiol from these urines were unsuccessful. The spontaneous delivery of a healthy living child prevented further observations on the urine of this woman.

This patient is the only one I have so far encountered in whom pregnandiol glucuronidate could not be isolated from the urine in late pregnancy. It is interesting and perhaps significant that she had not got toxæmia of pregnancy but chronic nephritis associated with evidence of impaired renal function.

COMMENTS

Because free pregnandiol is only slightly soluble in water, whereas the glucuronidate is freely soluble, the combination with glucuronic acid is probably a necessary prelude to the easy excretion of this end product of progesterone metabolism. It has been suggested that this combination is brought about in the liver, the normal excretion of the complex depending on the proper functioning of both kidneys and liver. Browne, Henry, and Venning (1938) suggest that the reduced amount of pregnandiol glucuronidate excreted in their cases of late toxæmia of pregnancy may be due to impaired conjugation with glucuronic acid by the liver. Hirsheimer has provided valuable information on hepatic function in toxæmia of pregnancy. Using the hippuric-acid excretion-test of Quick, with adequate safeguards to exclude fallacious results due to possible impairment of renal function, he has compared a large series of normal pregnant women with a group suffering from toxæmia of pregnancy. The results show that even in uncomplicated pregnancy hepatic function is moderately reduced in about half the cases, returning to normal after delivery. In toxæmia of pregnancy a similar slight reduction takes place, but this is not appreciably greater or commoner than in the healthy group. Hirsheimer's results therefore do not support the belief that hepatic function is significantly reduced in toxæmia of pregnancy.

My failure to find any pregnandiol glucuronidate in the urine of a woman with chronic nephritis in the last week of pregnancy suggests that renal damage may be a more likely cause of interference with the excretion of pregnandiol. Studies of renal function in pregnancy toxæmia by Chesley (1938) and Chesley et al. (1940) have shown this to be normal in the absence of chronic nephritis.

It appears therefore that the functional state of neither liver nor kidneys provides any theoretical reason for reduced excretion of pregnandiol glucuronidate in toxæmia of pregnancy. Thus my results, which indicate that little such reduction does take place, cannot be considered to be contrary to expectations. I conclude that serious interference with the normal mechanism of production of pregnandiol glucuronidate from endogenous progesterone, such as apparently took place in the cases of toxæmia studied by Weil (1938), is unusual and therefore cannot be regarded as an expression of a metabolic derangement typical of the toxæmia. It seems probable that, when the excretion of pregnandiol is much reduced or absent in pregnancy toxæmia, this is an expression of associated renal functional damage due to a complicating chronic nephritis.

SUMMARY

It has been claimed that the sterol complex pregnandiol glucuronidate, which is abundant in the urine in normal pregnancy, is excreted in greatly reduced amount in late toxæmia of pregnancy. Study of a series of 10 cases of such toxæmia, uncomplicated by nephritis, has not confirmed this claim. Pregnandiol was, however, absent in the last week of pregnancy from the urine of a woman with chronic nephritis.

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REDUCTION OF FRACTURES OF FOREARM, WRIST, AND METACARPALS

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THE principles underlying the reduction of fractures are: "(*a*) Abolition of muscle spasm by suppression of pain, preferably by local or regional anæsthesia. (*b*) Overcoming of the muscle tension by placing the joints of the affected limb in a mid-position, and in such a manner that the peripheral fragment is brought into line with the central. (*c*) Suitable traction and counter-traction."*

Muscle spasm is abolished by local, regional, or general anæsthesia. Muscle tension is best overcome by placing all the related joints in the middle position. This position also provides ideal rigid right-angled levers, on which to exert traction and counter-traction. In fractures of the forearm, wrist, and metacarpals the tension of the long digital flexors and extensors can be balanced by bending the fingers and hooking them on to some mechanical apparatus.

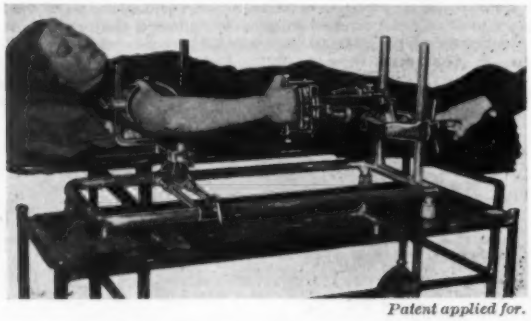
In present-day methods manual or mechanical traction is exerted on the extended fingers, and counter-traction on the humerus with a canvas sling or a calico bandage attached to a wall or a bed-post. Böhler's method of manual traction is now standard, having superseded all others by reason of its comparative simplicity and efficiency. But it has certain disadvantages: it sometimes does not overcome shortening in strong muscular patients; an assistant is required to perform traction, and in a large clinic two or more must be available to perform this task alone, because it is so arduous and tiring; and the traction is necessarily jerky and uneven, especially during the change-over from one assistant to another. Manual traction invariably fails when it has to be maintained for long—e.g., in the reduction of a dislocated lunate—and the surgeon

* Böhler, L. The Treatment of Fractures, Bristol, 1935.

always tends to hurry on with the manipulation of the fragments and the application of the plaster cast. Lastly, it makes use of the extended fingers.

APPARATUS

To eliminate these disadvantages I have designed and had manufactured a simple apparatus which exerts skeletal traction and fulfils all the principles governing the reduction of fractures. It consists of a quadrilateral base, a finger-gripping device (hand grip) supported on two vertical rods fixed to one end of the base, and two arm pads carried on one movable vertical rod at the other end of the base (see figure). Both the hand grip and the arm pads are adjustable in height on their supports; and the rod that carries the arm pads is adjustable transversely and longitudinally to accommodate right and left arms and forearms of different lengths. The larger



Patent applied for.

pad is so placed as to exert counter-pressure on the distal third or half of the flexor aspect of the humerus, and the smaller pad to press on the dorso-external surface of the proximal end of the same bone, and so to prevent extension of the elbow-joint during traction on the forearm. The hand grip consists of a core and two pads. It is provided with a horizontal screw for exerting traction and a swivel joint with a lock to maintain any degree of pronation or supination that is desired. The core is shaped to accommodate right and left hands of either sex and of any age, except children under ten for whom a smaller core is available. It has two inclined and slightly convex surfaces that meet each other at an angle in front; the front is curved to compensate for the different lengths of the four fingers and to equalise tension on each. The proximal phalanges rest on one surface of the core, and the second and third phalanges on the other. The fingers are thus for practical purposes in the middle position, where they are maintained by two suitably shaped pads, which press on their dorsal surfaces. The core and these pads, like the arm pads, are lined with Sorbo rubber, the resiliency of which allows pressure to be distributed evenly on fingers of differing thicknesses, and painless traction to be maintained for long periods if necessary. The pads are mechanically operated; and a special arrangement is incorporated in their mechanism which allows the fingers to be put in and withdrawn before and after traction. It has not been found necessary to include the thumb when traction is applied for the reduction of fractures of the forearm, lower end of the radius, and four medial metacarpals. An additional thumb grip which can be fixed to the main apparatus is, however, available for the reduction of Bennett's and other fractures of the first metacarpal bone.

No attempt is made in this apparatus to secure ulnar deviation of the wrist, which is mentioned here merely to be condemned as a useless and sometimes dangerous practice. It is mistakenly supposed to prevent redisplacement of the distal fragment of a Colles fracture, but that complication is due to one thing and one thing only—inadequate immobilisation. A correct plaster technique, with the wrist exactly in the middle position, and a thorough moulding of the plaster over the wrist and the distal third of the forearm will always prevent it if two simple precautions are taken: to establish radiographically after the application of the plaster that the fracture has been correctly reduced; and to review, four or five days after reduction, those cases in which there was much original swelling of the wrist. The original cast, which has very likely become loose owing to the disappearance of the swelling, can then be replaced with a new and close-fitting cast.

TECHNIQUE

The patient lies on a table or a couch, and the apparatus, resting on a table of convenient height, is brought up close to the patient's injured side. A local anæsthetic is given; and, while waiting for it to take effect, the surgeon adjusts the horizontal travel of the hand grip, so that the whole length of the traction screw will be available for the reduction of fractures of adults, and half its length for those of children. He then adjusts the height of both the hand grip and the arm pads to the same level as the patient's shoulder-joint, to ensure a horizontal lie for the arm and forearm. The anæsthetic having taken effect, the patient is asked or is helped to place his upper arm against the concave surface of the larger arm pad, to bend his elbow, and to grip the core of the hand grip (see figure). When the fingers have been correctly applied to the core, the finger pads are closed and screwed down tightly on to them. The larger arm pad is now more carefully adjusted so as to lie immediately proximal to the bend of the elbow and in such a way that the forearm is taut. The upper arm being at right angles to the forearm and chest, the final adjustment is carried out on the smaller arm pad, which should be made to press closely on the upper end of the humerus. Traction is now begun and exerted slowly until the overriding or impaction deformity is reduced. The appropriate manipulations are then carried out and the fracture is radiographed. If the reduction is satisfactory, a plaster cast is applied and carefully moulded. Five minutes later the cast is sufficiently hard to allow the removal of traction.

To prevent the infliction of damage to the ligaments and bone by excessive traction, the length of the traction screw has been cut down to allow only about 20 kg. of traction to be exerted. Reassured by the knowledge that the screw has a safe upper limit, surgeons can use their experience in judging the amount of traction necessary to reduce individual fractures. But great care is always necessary when screw traction is used; traction must at all times be exerted slowly, and should be controlled by radiography until the surgeon has become thoroughly familiar with the apparatus; and in children only half the length of the screw should be utilised.

The efficiency of this apparatus in overcoming shortening or impaction deformity makes forcible manipulations unnecessary. All manipulation should be performed slowly, carefully, and deliberately. In some cases traction may produce a distinct gap between the fragments, and I make it a practice in those cases to reduce the traction slightly to avoid the possibility of non-union. The precaution is unnecessary when the gap is narrow, because the bony fragments tend to come together in the plaster after the release of traction.

The larger arm pad, like the arm sling and the cross bar of the Böhler leg frame, exerts pressure on the main artery of the limb and its related nerves, but it exerts this pressure over a much wider area. The intensity and duration of pressure will naturally vary. I have never seen any ill effects resulting from the use of this apparatus or of the Böhler leg-traction frame, but surgeons who are going to use them over an extended and continuous period of time (one or two hours) should be guided by their experience of tourniquets. Unlike a tourniquet or an Esmarch bandage applied to the upper arm, the pressure pad of this apparatus does not compress the relatively vulnerable radial nerve, and it allows collateral circulation to take place.

SUMMARY

(1) A portable apparatus is described which provides bloodless skeletal and mechanical traction. The traction is applied slowly and is never jerky.

(2) The apparatus holds all the related joints in the middle position; and the fingers have an equal share in the traction.

(3) It is comfortable to the patient's hand and maintains any degree of pronation or supination.

(4) With it a fracture can be reduced without the help of an assistant; traction can be maintained painlessly and comfortably for comparatively long periods, giving ample time for the manipulation of the fragments, the application, moulding, and setting of the plaster cast, and radiography.

(5) It should facilitate bone-grafting operations on the forearm, removal of lunates and scaphoids and drilling of ununited scaphoids.

I wish to thank Mr. H. West, who has collaborated in the development of the apparatus; Prof. E. Finch, for his encouragement; Mr. F. W. Holdsworth, for allowing me to use the apparatus in his department at the Royal Infirmary, Sheffield; and the makers, Messrs. Albert Browne Ltd., of Chancery Street, Leicester, for their valuable suggestions.

MORTALITY FROM LOBAR PNEUMONIA IN LONDON

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In view of the encouraging results of chemotherapy in pneumonia it seemed worth seeing whether there had been any sudden improvement in the mortality from lobar pneumonia in recent years, as recorded in the figures published by the Registrar-General. The only figures available for the year 1939 relate to the administrative County of London (including the city) published in the weekly reports. The deaths attributed to lobar pneumonia were extracted from this source for each of the last seven years and are shown in the first section of the table (they have not been published since the end of 1939). Although their numbers in each age-group show, as might be expected, much fluctuation from year to year, there was clearly in 1939 a pronounced fall at all ages up to 65, compared with the rate in the previous six years. At ages under 1 year, at 15–25 years, and at 25–45 years they numbered roughly only half the average annual level of 1933–37, while at 1–15 years they were about a third and at 45–65 slightly less than two-thirds. At all ages a reduction of 34% is recorded.

These changes may, however, be due in part to a number of causes: in the first place, the population of the County of London has been declining (7% between 1933 and 1939) so that the absolute numbers of deaths registered might naturally show a slight fall; secondly, the outbreak of war led to large changes in the distribution of population and in the tabulation of their mortality (deaths are no longer transferred to the usual place of residence, and now relate to civilians only). In addition, climatic factors and the presence or absence of influenza may produce variations in the annual figures for pneumonia deaths. Corresponding figures were extracted for deaths registered as due to other forms of pneumonia and to bronchitis and other respiratory diseases (lower sections of the table). They show that for these too there was a relatively low level of mortality in 1939, but that at all ages the fall was less than that observed for lobar pneumonia—some 20% decline for other forms of pneumonia and for bronchitis, against 34% for lobar pneumonia.

Study of the age-groups reveals that these changes are very unevenly distributed. In infancy, 1939 was a peculiarly favourable year for all these causes of death, the mortality in each case being only just over half the annual average of 1933–37. The fall in lobar pneumonia (an infrequent cause of death at this age) is no greater than the fall in the other causes. In childhood, ages 1–15, lobar pneumonia and other forms of pneumonia both show a large decline. In adolescence and early adult life lobar pneumonia shows the largest decline but the numbers are small. At ages 25–45 and 45–65 the numbers of deaths become considerable and it is here that a substantial advantage becomes apparent in the lobar pneumonia group. In 1939 the deaths attributed to it were only 45 and 61% of the annual average of 1933–37, whereas the corresponding figures were 72 and 87% for other forms of pneumonia, and 74 and 95% for bronchitis and other respiratory causes. At ages over 65 there has been no substantial change in any of the groups.

Taking ages 15–65 as one group the following changes are found: deaths from lobar pneumonia in 1939 were only 56% of the yearly average number in 1933–37; deaths from other forms of pneumonia were 84%; from bronchitis and other respiratory causes they were 90%. The abrupt and large decline in the number of deaths attributed to other forms of pneumonia in the ages of childhood—83 deaths in 1939 against 182 in 1938 and 292 in 1933–37—may also indicate the response of many such cases to treatment with sulphapyridine.

DEATHS ANNUALLY IN THE ADMINISTRATIVE COUNTY OF LONDON FROM LOBAR PNEUMONIA AND OTHER RESPIRATORY CAUSES IN 1933–39

(From the Weekly Reports of the Registrar-General)

Ages	Under 1	1–15	15–25	25–45	45–65	65–75	75 +	All Ages
LOBAR PNEUMONIA								
1933	30	77	44	190	378	178	117	1014
1934	45	70	48	196	400	199	129	1087
1935	33	38	31	112	321	143	94	772
1936	47	54	31	142	385	196	113	968
1937	37	57	34	116	390	192	123	949
Average 1933–37	38	59	38	151	375	182	115	958
1938	41	45	46	145	334	200	112	923
1939	20	19	20	68	229	167	114	637
Percentage of aver. in—1933–37								
1938	*108*	*77*	*121*	*96*	*89*	*110*	*97*	*96*
1939	*53*	*32*	*53*	*45*	*61*	*92*	*99*	*66*
OTHER FORMS OF PNEUMONIA								
1933	449	372	38	175	613	423	486	2556
1934	705	411	32	126	573	408	422	2677
1935	504	186	25	106	425	359	344	1949
1936	608	288	27	135	559	460	463	2540
1937	563	201	24	141	602	475	522	2528
Average 1933–37	566	292	29	137	554	425	447	2450
1938	479	182	24	106	443	370	432	2036
1939	305	83	25	99	481	412	541	1946
Percentage of aver. in—1933–37								
1938	*85*	*62*	*83*	*77*	*80*	*87*	*97*	*83*
1939	*54*	*28*	*86*	*72*	*87*	*97*	*121*	*79*
BRONCHITIS AND OTHER RESPIRATORY CAUSES								
1933	89	44	31	157	657	574	1097	2649
1934	147	58	24	128	628	594	967	2546
1935	114	35	33	137	511	444	727	2001
1936	137	50	36	129	690	620	960	2622
1937	104	40	21	130	681	573	884	2433
Average 1933–37	118	45	29	136	633	561	927	2450
1938	104	25	33	92	475	408	546	1683
1939	63	28	19	101	601	500	698	2010
Percentage of aver. in—1933–37								
1938	*88*	*56*	*114*	*68*	*75*	*73*	*59*	*69*
1939	*53*	*62*	*66*	*74*	*95*	*89*	*75*	*82*

SUMMARY

The deaths registered in the County of London as due to lobar pneumonia in 1939 were at ages 15–65 only 56% of the annual average in 1933–37, whereas deaths from bronchitis and other forms of pneumonia were 90 and 84% of the average. The significant change in the former may be attributed to the introduction of chemotherapy. At ages over 65 there was no material improvement, while in childhood deaths from lobar pneumonia declined considerably but by no more than was apparent for other respiratory causes of death; the evidence in favour of the specific treatment at these ages is therefore equivocal.

A METHOD OF ARRESTING CLOT IN TRANSFUSION WITH STORED BLOOD

By Alan M. Giles, B.Sc., M.B. Glasg., D.P.H.
(From the Blood Bank of the Southern General Hospital, Glasgow)

Some apprehension has been caused among blood-transfusion workers by the blockage of tubes and filters during transfusion with stored blood. This happens only with blood which has been stored 8 days or longer and is caused by a gelatinous clot. There is little mention of this clot in published reports but at a meeting of the Pathological Society of Manchester Dr. J. Goldman [1] said:

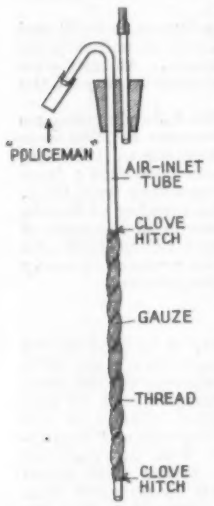
"Up to 72 hours the technique of giving stored blood was as simple as giving fresh blood. After this time a gelatinous clot appeared which blocked tubing and needles. After 10 days most bloods would block the tubes and needed vigorous filtration."

We have had a similar experience here. The clot passed into the tubes and filter with the first few ounces of blood, slowing down the rate of flow to drip speed. The apparatus used was the "closed system" issued by the Department of Health. The introduction of normal saline with a Y tube did not prevent this blockage.

INVESTIGATION

Forty-one pints of blood stored for various periods have been examined for clot. In each of the twenty-seven bottles stored 8 days or longer the clot was found; in the remaining fourteen pints, all under 8 days old, no clot could be detected. The series was well spread out over the storage ages of 1 to 22 days. It was found that the gelatinous clot appeared with surprising suddenness after the 7th day of storage. Four pints stored 6 days and three pints stored 7 days contained no clot; but in the three pints of blood stored 8 days and in older bloods the clot was found in every specimen.

The clot developed as a thin pinkish-grey film between the plasma and corpuscle layers. This film was seen on the surface of the corpuscles after 24 hours' storage. Up to the 7th day of storage it broke up when the blood was mixed, and it did not interfere with the transfusion-rate. After the 7th day the film became slimy and gelatinous and formed a stringy clot when the blood was mixed, and later it passed into and blocked the delivery tubes. The clot consisted of degenerate white cells caught in a meshwork of fibrin. In this series the anticoagulant fluid used was citrate, 1 c.cm. of a 3·8% solution of anhydrous sodium citrate to each 9 c.cm. of blood. Bleeding of the donors was by the closed method, with vacuum flasks.



Clot arrester on air-inlet tube of transfusion apparatus.

METHOD OF ARREST

On the apparatus used by most hospitals is a long glass inlet tube. Two clove-hitch knots are tied to it with linen thread. These are so placed that one is ¼ in. from the free end of the tube and the other 5 in. from the first. Between these knots is wrapped a 10-in. length of 1-in. ribbon gauze in a clockwise spiral. The gauze is now secured by winding the long end of one of the knots in an anticlockwise spiral till it reaches the other knot, to which it is tied (see figure). The apparatus is now autoclaved in the usual manner.

When a transfusion has to be given the blood is left unmixed, and the cork holding the air-inlet and blood-delivery tubes is placed loosely into the neck of the bottle. The air-inlet tube pierces the clot lying on the surface of the corpuscles. The clot is caught on the gauze and takes up the position of a half-closed umbrella. Before finally fixing the cork the blood is stirred gently with the air-inlet tube. This brings the rest of the clot into contact with the gauze, to which it adheres. The blood is then mixed thoroughly by inverting the bottle several times. During this operation the rubber "policeman" should still be on the atmospheric end of the air-inlet tube, and the delivery tubes should be compressed to prevent loss of blood. The bottle is now hung on its stand. After removal of the "policeman" and adjustment of the drip chamber the apparatus is ready for the transfusion. During the mixing of the blood and throughout the transfusion the clot remains firmly adherent to the gauze arrester and does not in any way interfere with the flow of blood.

1. Cited in *Brit. med. J.* 1940, **1**, 827.

RESULTS

We have arrested the clot by this method in all of twenty transfusions with blood stored 8 days or longer. In many other transfusions, made with blood stored less than 8 days, there was no clot and the arrester did not come into action. Since the gauze arrester has been fitted as routine to all sets of transfusion apparatus in this hospital there has been no case of blocked tubes or filter or of slowing of the transfusion-rate with blood of any storage age.

SUMMARY

Blood stored 8 days or longer produces a clot which is apt to block the transfusion apparatus. A successful method of arresting this clot is described.

LORDOSIS AND MUSCULAR DYSTROPHY

By G. E. Donovan, M.Sc., M.B. N.U.I., D.P.H.
MEDICAL OFFICER OF HEALTH FOR THE LLWCHWR URBAN AND GOWER RURAL DISTRICTS

A type of simple lordosis which is apparent on standing but disappears when the child sits is often seen by school medical officers in the poorer class of children. As a rule the condition is ascribed to bad habits of stance and remedial exercises are prescribed. I have changed my opinion in the light of the following case.

FAMILY HISTORY

A family was investigated from which one of these children with lordosis came; it consisted of father, mother, daughter and son.

The *father* was aged 37. A tin-worker, unemployed. Came of poor stock. His two brothers and two sisters as well as himself suffered from a fixed type of lordosis which did not disappear when they were seated.

The *mother*, aged 30, came from better stock than the husband; she had no lordosis. Had been married twelve years. She gave birth to a girl eleven months after the marriage. During pregnancy she developed "nervous debility." The husband was in partial employment at the time, but they were assisted by the mother-in-law. The family was on parish relief during the second pregnancy, and still received help from the mother-in-law. The second child, a boy, was born eighteen months after the first. Since then the mother had not become pregnant; contraception not practised. The mother-in-law helped the family exchequer for two years after the second child's birth; then she died, and with her this extra source of income.

The *daughter*, aged 11, had always been a nervous child, becoming hysterical at times. She had suffered from pains in her arms and legs on and off for the past six years, and two years ago had developed chorea. The mother had noticed for five years that the child had a hollow back when standing. This she ascribed to "the father breaking out in her." The child was well covered and showed no muscular wasting or hypertrophy. When standing she displayed typical lordosis and protuberant abdomen; her scapulæ tended to be winged. These signs disappeared when she sat down. Both knee-jerks were absent.

The *son*, aged 9½, had always been a weakling. He had started to walk at the age of eighteen months, but had never attempted to climb up the stairs like his sister; the parents did not attach any importance to this. They first noticed something wrong when the child, at five years of age, was unable to run properly and was liable to fall; when he fell could not rise again. His condition became progressively worse, so that he could not get on to the footpath from the roadway, in spite of treatment with glycin, massage, remedial exercises and electrical treatment. He could only walk a very short distance before becoming fatigued. The mother had to carry him upstairs in her arms for the medical examination. He was malnourished and had a well-marked lordosis plus a protuberant abdomen; the lordosis disappeared when he sat down. His scapulæ were winged, he stood on a broad base with his shoulders thrown back. He had symmetrical atrophy of the muscles of the proximal segments of his limbs, but the distal muscles were not hypertrophied; there was marked looseness of his lips. He waddled on a wide base, with his toes turned in and his arms abducted from his side to help him keep his balance; his left side was weaker than his right. When sitting down he gently lowered himself into position by placing his hands on his thighs; his aim was to allow himself to fall gradually into the seated position, but before he was halfway through the act he fell with a flop into his seat. If the seat was low he could not rise unaided. He had not learnt the trick of climbing up his legs to rise from the floor. When an attempt was made to lift him by holding him in the axillæ he slipped through the hands. His hand movements were clumsy. His special senses were normal. He showed no gross sensory changes; sphincters were unaffected, sexual development normal.

THE FAMILY DIET

A typical day's diet for the family would be: breakfast, white bread and imported butter, tea with milk and sugar; midday meal, a small quantity of imported meat with chips, or egg with chips, rice pudding or custard; evening meal, bread and jam, tea with milk. The girl took two-thirds of a pint of pasteurised milk in school. The boy also had milk when he attended school which was seldom. He disliked and never took greens, and the other members of the family only ate greens on rare occasions.

TREATMENT AND RESULTS

Each member of the family was put on fresh dried whole wheat germ, ¾ oz. four times daily for six weeks. At the end of this period the father stated that he felt better than before the treatment; his lordosis was unchanged, as would be expected. The mother believed she had more energy; it is still too soon to say whether treatment has had any effect on the sterility. The daughter had no further pains in her limbs, looked much brighter, and felt more energetic; the postural lordosis had completely disappeared; the knee-jerks were present. The son decided he would like to go back to school from which he had been absent three months. He could walk longer distances and the neighbours had remarked that he walked more freely; he was less inclined to slip through the hands when supported by the axillæ; his lips were firmer. The postural lordosis was less marked, as shown by the fact that his apparent height had increased from 3 ft. 10½ in. to 3 ft. 11¼ in. He developed a slight urticarial rash while under treatment.

COMMENT

I suggest that at least some cases of postural lordosis found in school-children are minor or arrested forms of muscular dystrophy; probably mild forms of this disease are more prevalent than we think. This type of case is illustrated by the daughter. If the predisposing factors are strong the child may develop true muscular dystrophy, as happened in the boy. Postural lordosis in children can develop later into the fixed type present in adults. This probably explains the fixed lordosis in the father and his brothers and sisters.

Bicknell (1940) suggests that the muscular dystrophies are deficiency diseases, probably due to lack of vitamin E, and are curable. He treated his cases with fresh dried whole wheat-germ, ½ oz. twice daily. Antopol and Scholtland (1940) describe considerable improvement in muscular dystrophy treated by the subcutaneous injection of synthetic vitamin B_6. The late sterility of one or both parents suggests that the deficiency here may be of vitamin E. Since whole wheat germ, in addition to B_1, contains vitamins E and B_6, it was chosen for treatment. Vitamin E is stored very well, at least in the rat's body; it should therefore be as effective to give 365 doses all at once on the first day of the year to the rat, as to give daily doses throughout the year (Harris 1937). There are, however, practical objections to this in the human subject and it was decided to give the family ¾ oz. of dried whole wheat germ four times daily for short periods.

It seems reasonable to give all children prophylactic doses of dried whole wheat germ to prevent the conditions described in this article.

SUMMARY

In a working-class family living on a poor diet the father had a fixed lordosis, the son muscular dystrophy, and the daughter a postural lordosis. The son improved and the daughter's lordosis disappeared when the family were given dried whole wheat germ. It is suggested that all three conditions arose from vitamin deficiency.

REFERENCE

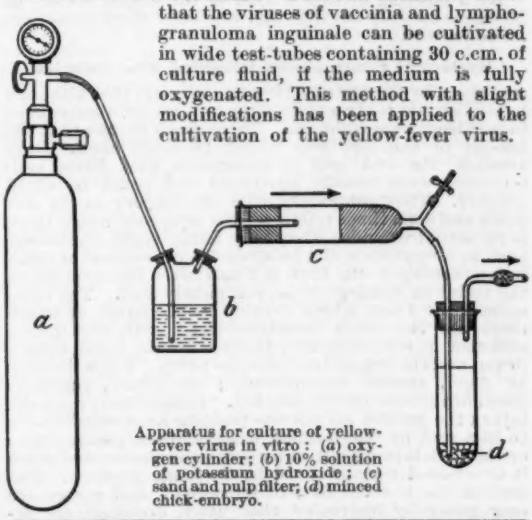
Antopol, W. and Schotland, C. E. (1940) *J. Amer. med. Ass.* **114**, 1058.
Bicknell, F. (1940) *Lancet*, **1**, 10.
Harris, L. J. (1937) Vitamins in Theory and Practice, Cambridge, p. 180.

CULTURE OF YELLOW-FEVER VIRUS IN VITRO

BY G. M. FINDLAY, C.B.E., M.D., D.Sc. Edin.
AND
F. O. MACCALLUM, M.D., B.Sc. Toronto

(*From the Wellcome Bureau of Scientific Research, London*)

THE usual method of growing the yellow-fever virus in vitro involves the use of Erlenmeyer flasks of 50 c.cm. capacity. Each of these flasks contains not more than 5 c.cm. of fluid consisting of 1 part of inactivated human serum and 9 parts of Tyrode's solution to which is added two drops of minced chick-embryo tissue. The virus grows readily in such flasks; but, if large amounts of virus-containing fluid are required, the method entails considerable labour in the cleaning and sterilisation of flasks and in the number of manipulations required during the inoculation of the flasks. Yaoi and Arakawa[1] claim that the viruses of vaccinia and lymphogranuloma inguinale can be cultivated in wide test-tubes containing 30 c.cm. of culture fluid, if the medium is fully oxygenated. This method with slight modifications has been applied to the cultivation of the yellow-fever virus.



Apparatus for culture of yellow-fever virus in vitro: (*a*) oxygen cylinder; (*b*) 10% solution of potassium hydroxide; (*c*) sand and pulp filter; (*d*) minced chick-embryo.

1. Yaoi, H. and Arakawa, S. *Jap. J. exp. Med.* 1939, **17**, 369.

TECHNIQUE

The method of cultivation can be readily understood from the accompanying figure. The oxygen from a cylinder is first passed through a wash bottle containing a 10% solution of potassium hydroxide and is then led through a glass tube containing a sand and pulp filter, such as is used in the filtration of virus-containing material, into a test-tube of 50 c.cm. capacity. The same sand and pulp filter may be used for at least six weeks. The test-tube is closed with a rubber cork covered with tinfoil to ensure a tight fit. The inlet glass tube is continued to within 2–3 mm. of the bottom of the test-tube, and at its outlet should have an internal diameter of 5 mm. The exit tube from the test-tube is closed with a plug of absorbent cotton. The test-tube, with inlet and outlet tubes in place, is first sterilised and is then filled with 30 c.cm. of the serum Tyrode culture medium and about 0·5 c.cm. of finely minced chick-embryo. The minced chick-embryo sinks to the bottom of the test-tube, and it appears to be important that the inlet tube should reach into the mass of embryonic tissue. The outlet screw of the oxygen cylinder is adjusted so that eight to ten drops of oxygen pass through the medium per minute. If desired, two or more test-tubes may be employed at the same time. Passages are made every four days. The whole of the apparatus is kept in the hot room at 37° C. If a hot room is not available, arrangements can be made for the test-tubes containing the culture media to stand in an incubator while the oxygen cylinder and the other apparatus, connected to the tubes by a long rubber tube, remains outside at room temperature.

RESULTS

Twenty-four subcultures of the tissue-culture virus 17 D have now been made in the oxygenated culture medium in vitro. No change has been noted in the pathogenicity of the virus for mice, and titration of the virus has shown that it is pathogenic, on intracerebral injection of mice, in dilutions of 10^{-3} or 10^{-4}, an end-point which is equal, and in some cases superior, to that obtained by culture in flasks.

Since the method has now been applied successfully to three viruses as dissimilar as vaccinia, lymphogranuloma inguinale, and yellow fever, it is probable that many other viruses and possibly rickettsiæ may also be grown under the same conditions.

Medical Societies

R.S.M.: SECTION OF SURGERY

AT a meeting of this section of the Royal Society of Medicine on July 30, with Mr. ZACHARY COPE presiding, an address on

Hysterical Contractures following War Injuries

was given by Sir ARTHUR HURST. He said that although in civilian life contractures after injuries were infrequent in war they were common. There was a danger that the lessons of the last war might be overlooked. Only towards the end was it recognised that these contractures were usually hysterical and could be cured quickly. They commonly arise after injury to the soft parts and sometimes follow a twist or sprain where there is no actual wound. They may follow slight operations such as amputation of a hammer-toe or removal of semilunar cartilage; the limb is found after the removal of the splint or bandage to be completely stiff. The commonest are those which develop in the hand, of which there are two main varieties—those with the fingers stiffened in extension and those with the hand tightly flexed and the fingers bent into the palm. The wrist may be fixed, though uncommonly; the elbow, shoulder, knee, hip or toes may be affected. Immediately after the injury the patient adopts the position most comfortable to him and by maintaining it develops a contracture; or the limb is immobilised by splints or plaster, and when it is released remains fixed in the same position. The patient has lost the idea of movement, and nurses are now generally instructed that when dressings are removed the patient must be put through the complete range of movement of the affected part. Contractures are very likely to arise if the patient is sent to the physiotherapy department, and many cases would not have developed in the last war but for the mistaken treatment they received. Babinski came to the conclusion that the contractures were reflex and therefore organic in origin; the trophic changes which take place in patients with deficient circulation following disuse of a part led to this mistake. The skin becomes wrinkled, blue, thin and shiny, the finger nails develop badly, being grey and lustreless, grooved and brittle, and the bones become abnormally translucent.

In the early days, Sir Arthur Hurst continued, these cases were treated by suggestion and occasionally hypnotism, but simpler methods of psychotherapy were found to be more valuable. The patients had never been shell-shocked. Persuasion, manipulation and re-education were found to be effective and in the ideal case cure was obtained without the patient being touched—he was merely told what to do. At Seale Hayne military hospital in the last war there were ten medical officers, only one of whom had had any experience of psychotherapy or neurology; yet any one of them would have been annoyed if he had not cured each case at a single sitting which might last a few minutes or extend into a few hours. No massage or electricity was used or needed. The medical officer began by explaining how the contracture had developed. The patient was taught to relax, to let the limb go as limp as possible; the doctor moved the affected part a little and allowed it to relax again. After a while the patient was encouraged to move it for himself, and gradually, by a combination of passive and active movements after complete relaxation, normal mobility was restored. Some of the cases had been regarded as surgical, and operated on, but the contracture persisted; even sympathectomy had been done with no result.

Dr. J. B. MENNELL agreed that physiotherapy was calculated to make the patient worse. It was futile to treat either hysterical contractures or hysterical paralysis by physical methods.

Colonel HENRY YELLOWLEES complained that Sir Arthur Hurst had made only one remark about the psychopathology of these cases—namely, that the patient had lost the idea of movement. That might be satisfying to the surgeon, to the expert in physical medicine, and even to the neurologist, but it was not satisfying to those who knew anything about hysteria. It was interesting to hear that only one of his team of ten had had any experience of psychological medicine or even of neurology; if that was so there must be precious little in psychotherapy. Otherwise how was it possible for nine of the team who knew nothing of the subject to become equally expert in a few months? It was not clear whether they had relied on suggestion or persuasion; probably Sir Arthur was not clear either.—Sir Arthur Hurst reminded Colonel Yellowlees that in the last war psychotherapy had not developed to its present extent; it was impossible at that time to get any large group of trained psychotherapists. If the ten members of his team, though ignorant of modern psychotherapy, were able to cure all the hysterical cases and they remained well, as it was known they did, that was all that was required.

Sir ALFRED WEBB-JOHNSON said that most of the patients at Seale Hayne had an hysterical contracture grafted on the top of an injury and the tragedy was that the condition was not recognised for many months after it came into being, yet it was susceptible of rapid cure.

Dr. E. B. STRAUSS emphasised the great difference between cases of hysterical contracture and conversion hysteria. The average case of conversion hysteria would not clear up in a single sitting, whereas an hysterical contracture would. The majority of cases of contracture in civilian life were due to over-splinting and physiotherapy; the hand had gone to sleep and "forgotten how to wake up."

Colonel YELLOWLEES asked whether cases of deaf mutism and conversion hysteria were cured in France at one sitting.—Sir Arthur Hurst replied that they were constantly cured. The cases he had spoken of were in a different category; they did not come in within twenty-four hours, but were seen after perhaps eighteen months in different hospitals where they had got worse and at last become completely demoralised; and although it was

possible to eliminate their symptoms they were fit only to be returned to civilian life.

Mr. ZACHARY COPE suggested that, under deep anæsthesia, a joint which was not absolutely ankylosed would be movable.—Sir Arthur Hurst remembered a patient with knees rigidly extended who had had many kinds of treatment and was given a general anæsthetic but could not relax. Psychotherapy was tried and gradually relaxation was obtained. It was extremely difficult to explain these cases.

Dr. J. F. VENABLES mentioned a case of a stiff knee in which there were no signs of disease and no changes were seen on radiographic examination. Dr. R. L. WORRALL asked whether any disturbance of sensation in the affected areas was noticed and whether there was any contraction of the muscles of the face or of respiration.—Sir Arthur Hurst replied that he had never looked for sensory changes, being quite sure he would find them if he did so. He remembered only one case of facial spasm and that did not follow an injury but was associated with dreams and night terrors. The spasm disappeared with the dreams.

Colonel H. C. GARLAND emphasised the importance of diagnosis of all hysterical disorders; and Mr. LIONEL NORBURY said he had had several cases of functional hysterical contraction in women after breast operations.

THE RECRUIT'S HEART

METHODS of detecting effort syndrome and diseases of the heart and arteries are the subject of the latest recommendations to the Minister of Labour by Lord Horder's advisory committee on the examination of recruits.

EFFORT SYNDROME

Effort syndrome has been known under various names, including soldier's heart, irritable heart, and D.A.H. The condition was first mentioned in the American Civil War, and has probably cropped up among soldiers ever since the idea of collecting warriors into bands and leading them into battle occurred to the earliest war-lords, though we owe its present name to Sir Thomas Lewis. Lord Horder's committee have amended and amplified the instructions already issued for the guidance of medical boards, using the term effort syndrome to denote "a condition in which the characteristic symptoms are nervousness, a feeling of exhaustion, left mammary discomfort, palpitation, giddiness and dyspnœa on exertion." They point out that of the many men who break down during training or active service with these symptoms, the majority are neuropaths; in a few the symptoms can be ascribed to chronic or temporary toxæmia; there is rarely any lesion of the heart. A medical board may be able to foretell that a given recruit is likely to break down in this way from his appearance and demeanour or by evidence of nervous instability in his history or on examination. The committee suggest that habitual avoidance of exertion in recreation is suggestive. An exercise-tolerance test will not help the board to detect potential cases but it may make it easier to gauge the degree of emotional disturbance in patients who have already developed the syndrome. The committee prescribe the following revised exercise-tolerance test.

1. The pulse-rate is taken for 15 seconds with the man standing.
2. He places one foot on a chair at least 15 in. in height, keeping the other foot on the floor; he then raises himself until both feet are on the chair and his body is upright, and then lowers himself until one foot is on the floor. This is repeated twenty times in 60 seconds. He may use the back of the chair to steady himself when getting on and off the chair.
3. The pulse-rate is then taken for 15 seconds.
4. The man stands still, and 45 seconds later—that is, one minute after completing the exercise—the pulse is taken again for 15 seconds. By that time the rate should be the same as the original rate or lower. Any persisting dyspnœa or distress is noted.

If the original pulse-rate is regained in 60 seconds and there is no dyspnœa or distress the man is said to have good exercise tolerance. An unsatisfactory result may be due to nervous instability or some cardiovascular defect, and must be investigated appropriately. The test alone is not conclusive evidence of these conditions or of a man's unfitness for grade 1. The response may be affected by temporary factors such as a common cold or lack of fitness following prolonged sedentary work.

DISEASE OF HEART AND ARTERIES

Examination for disease of the heart and arteries is to be carried out while the man is standing and also when he is lying on his left side, a position which makes it easier to detect some types of murmur. The committee consider that any man should be classed as grade 4 whose heart shows signs of enlargement, aortic or mitral disease, or congenital malformation, even though the lesion is well compensated and the man gives a fair response to the exercise-tolerance test. A systolic murmur heard at the apex is not to be accepted alone as evidence of structural disease, but when it is present a high exercise tolerance should be required, and mitral and aortic disease must be carefully excluded. The committee point out that a systolic murmur heard at the base is common in health, and may be disregarded when loudest in the pulmonary area, unless associated with other signs of congenital heart disease. If it is loudest in the aortic area, transmitted upwards, and accompanied by a thrill it is to be taken to indicate aortic stenosis.

They point out that if the cardiac impulse is felt beyond the mid-clavicular line the heart is enlarged, unless the displacement is due to scoliosis, however slight, or to pulmonary disease. The commonest causes of enlargement are mitral and aortic disease. Hypertension and congenital heart disease are less common causes. Abnormal rhythm is not necessarily evidence of organic disease. Before grading a man his previous history must be reviewed—his occupation and athletic habit—as well as his response to the exercise-tolerance test. Tachycardia is most commonly due to nervousness, especially in younger men, but hyperthyroidism should be excluded. Paroxysmal tachycardia is rare, but if diagnosed would call for low grading. The possibility that the man has taken drugs must be borne in mind. Cases of cardiac arrhythmia and tachycardia of doubtful nature are to be referred to a consultant. The blood-pressure is to be taken in all men over forty, and in any case of unexplained cardiac enlargement or suspected arteriosclerosis. A man with a diastolic reading between 90 and 100 mm. Hg (as estimated when the pulse sound disappears) should not be placed higher than grade 3. If the diastolic reading is over 100 mm. Hg the man must be placed in grade 4.

WE are not the only country affected by the loss of Europe's herb gardens, or the disorganisation of the drug market. Surgeon General Parran, addressing the health officers and public health nurses of America last month, pointed out that as Holland was no longer able to import, prepare and distribute quinine, the only source of the drug was now the Dutch East Indies. The Dutch cartel had made it impossible to store a sufficient war chest with quinine and yet all central and south America looked to the United States to supply their need. Military operations in the tropics could not be carried out unless quinine—or the equally potent synthetic drug, Atebrin—was available in large quantities. The position in regard to morphia was more promising. The vaults once used to store gold at Washington now held enough morphine to last three years, and opium poppies could be grown in many parts of the United States; but it was important to plan the planting now. The Surgeon General added that in tropical America yellow fever was still a problem. He mentioned that the present reserve of vaccine would be insufficient to immunise one regiment, and that funds were needed to build up an effective reserve.

"ADDRESS UNCOMMUNICATED."—The editor of the Medical Directory asks us to remind certain of our readers that these words will appear in the 1941 directory after their names if they do not provide an alternative without delay. The offices of the directory are at 104, Gloucester Place, London, W.1.

Reviews of Books

Tuberculosis of the Upper Respiratory Tracts

By F. C. ORMEROD, M.D. Manc., F.R.C.S., surgeon to the throat and ear department, Brompton Chest Hospital, London. London: John Bale Sons and Staples. Pp. 215. 21*s*.

THE many coloured plates in this expensive book are justified by the fact that anyone looking through them will recognise conditions which he has seen and which have puzzled him. Mr. Ormerod has studied the literature of his subject from its beginnings and has woven what he has gleaned into his account; but he is at his best when he is describing his own experience, especially in regard to tuberculous laryngitis. The clinical problems presented by patients with this condition are so varied that few practising laryngologists are experienced in all of them. Sir StClair Thomson's report to the Medical Research Council (1924, No. 83) is a historic piece of medical literature, but, as far as tuberculous laryngitis goes, his experience was a limited one: he dealt with the laryngeal manifestations in a selected group of patients at a stage of the disease in which there was hope of complete recovery. Mr. Ormerod has been fortunate, or wise, in spreading his net so wide that it also covers those patients with more advanced disease in whom recovery is still possible but not very likely, those who are clearly never going to rise from their beds again, those in whom the disease is not yet suspected and those not yet diagnosed. He also takes into consideration variations in nutrition, financial position and mental make-up of his patients. A section on the rare lesions outside the larynx should be valuable not merely to the laryngologist but to the physician and tuberculosis officer as well. Every neurologist is an expert with the ophthalmoscope; we may look to the time when every chest specialist is equally expert with the laryngoscope.

Dermatologic Allergy

By MARION B. SULZBERGER, M.D., assistant clinical professor of dermatology and syphilology, skin and cancer unit of the New York Post Graduate medical school and Hospital of Columbia University. London: Baillière Tindall and Cox. Pp. 540. 47*s*.

THIS work is intended, writes the author, as only a primer or introduction to the study of dermatologic allergy, in the form of lectures given to beginners, and is not a presentation for the expert, the immunologist, the allergist or the dermatologist who is well acquainted with the subject. Even so, the book proves very complete and even complex to one no longer a beginner. The complexity of definitions and classifications that have arisen since the coining of the terms "anaphylaxis" and "allergy" early in the century is discussed, and a glossary of eighteen pages of definitions and explanations of technical terms employed in the lectures is included.

Dr. Sulzberger is careful to point out that a manifestation is allergic only when it can be demonstrated conclusively to be due to a certain agent or substance acting on tissues or organs which have been altered in their capacity to react, and only when it can be shown that the alteration in the capacity to react is the result of previous exposure to the same or an immunologically related agent. In other words, it is necessary to show (1) that the causal agent or one of its immunological relatives was encountered at some previous time, (2) that the response at the subsequent reaction-eliciting encounter was different from that which was produced at the first encounter, and (3) that the demonstrated alteration in the capacity to react was the result of a previous encounter.

The general principles involved in investigating a case of allergic dermatosis are ably discussed and the method of carrying out the patch test is very carefully described, as is the interpretation of positive and negative reactions. The book includes a detailed description of some manifestations of allergy in infectious diseases—tuberculoderms, sarcoid group, fungi (dermatomycoses), cutaneous syphilis and other miscellaneous infections, parasitic infestations and insect bites. Drug allergy is also well presented. The book contains two useful appendices—a list of substances for patch testing and the concentrations to be employed—and a tabular presentation of the criteria for determining the industrial character of a dermatitis. In addition there is a good chapter on the management of eczematous and urticarial dermatoses exclusive of procedures based on allergy, and the rôle of drugs and inhalant allergens in the causation of chronic urticaria is ably stressed. The book can be recommended as a sound exposition of the subject by an author with extensive clinical and experimental experience.

Injection Treatment

By PENN RIDDLE, M.D., F.A.C.S., assistant professor of clinical and operative surgery, Baylor University college of medicine; director of the varicose-vein clinic, Parkland Hospital, Dallas, Texas. London: W. B. Saunders Company. Pp. 200. 27*s*. 6*d*.

THIS book sets out the indications and contra-indications for sclerosing treatment and its technique in an orderly, clear and unprejudiced way. It is well illustrated and reference is easy and exact. The historical survey is kept within reasonable limits and does not savour at all of propaganda. The section on varicose veins contains much useful information on the treatment of varicose ulcers and on ligature of the internal saphenous vein, and will be a valuable guide to anyone running a varicose-vein clinic. The injection treatment of hæmorrhoids and anal fissures, which is now well established, is fully explained, and in the final section Dr. Riddle discusses sclerosing methods which have not gained quite as much support. Injection for enlargement of the prostate gland, for example, does not seem to rest on any very firm pathological basis. The account here given seems to be derived from reports of the success of others rather than from personal experience. In the injection of varicocœle the impression is left that the large mass of thrombosed veins would be as uncomfortable as the previously patent bunch of veins. It is only fair to the author to say that surgery is nowhere condemned as an alternative to injection.

Air-Raid First-Aid

By ROBERT J. BLACKHAM, C.B., M.D., D.P.H., formerly D.D.M.S. of an army corps. London: John Bale and Sons and Staples. Pp. 32. 6*d*.

Col. Blackham has set out, in the form of diagrams, lists and illustrative tables, the first-aid treatment for conditions which he thinks may arise in connexion with an air-raid. There are also jingling rhymes about gases and how to know when they are coming and what to do when they have come. Whether the information is given in a form which will enable the first-aid worker to translate it into useful assistance to the injured must be left for time to decide. It is wonderful what a lot comes under A.R.P.—ear-wigs, weaving spiders, and black beetles may inhabit our outdoor shelters or our indoor cellars; in a moment of boredom during an air-raid the baby may put a boot-button up its nose; or a youngster, playing with father's tackle, may run a fish-hook in his finger. But it is hard to imagine where arsenic poisoning comes in. This pamphlet tells you how to deal with all such emergencies.

L'année médicale pratique 1940

Edited by Prof. C. Lian. Paris: Réné Lépine. Pp. 452. Frs.36.

Now in its nineteenth year this French medical annual continues to give a useful summary of current thought in medicine, surgery, obstetrics and gynæcology. It is based principally on French work but due attention is paid to important contributions from this country and America. A large amount of space is given to the new chemotherapeutic preparations, there is an interesting article on the organic mercurial diuretics, and oxygen therapy is well reviewed. Of special interest at the moment are articles emphasising the danger of primary suture in war-wounds and the advantages of stored blood for transfusion. The article drawing attention to yet another drug for lowering blood-pressure has a distinctly Gallic flavour, but on the whole the annual suggests that medical practice is steadily becoming more uniform.

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THE LANCET

LONDON: SATURDAY, AUGUST 10, 1940

THE MEASUREMENT OF PAIN

WHEN the little girl said tearfully to her sister, "My toothache is worse than your toothache" she put her finger on the crux of the matter; for who shall say her nay? Pain is one of the phenomena that defy measurement, so many are the variables. Some will maintain that there is a wealth of diagnostic information contained in terms commonly applied to pain: gnawing, aching, pricking, stabbing, boring, tingling, cutting, shooting, starting, cramping, agonising, oppressive, bearing down, and many others; and the practitioner may never get the help from his scientific colleagues which will enable him to be more precise.

The researcher on analgesics, having long been aware of the difficulty of standardising conditions, has reason to be grateful to LEWIS [1] and his collaborators for their fundamental investigations on the nature of pain. His research with HESS [2] shows that under stated conditions a momentary painful stimulus applied to the skin is always described as pricking, and that the sensation derived from a prolonged stimulus is described as burning. WOLFF, HARDY and GOODELL [3] have evolved a method which does, in fact, standardise a painful stimulus, and enables the observer to work on the human subject in order to investigate the relative merits of analgesics. It is significant that they refer to the pain produced by their thermal stimulus applied to the skin as a sharp, "bright" pain, to be distinguished from an ache or deep pain, recalling LEWIS's reference to the same terminology, which has been in use for some time among German workers. Although thermal stimulation as a method of producing pain is old in principle (Goldscheider used it in 1884), its adaptation for quantitative research may justifiably be claimed to be a new method. One advantage of this form of stimulus lies in the fact that there is a sharp end-point between the preliminary sense of heat and the onset of actual pain. The light from a 1000-watt lamp is focused by a condensing lens through a fixed aperture on to the forehead of the subject, the intensity of the radiation being controlled by a rheostat. By mechanical means an exposure lasting exactly 3 seconds is produced on an area of 3·5 sq. cm. If the subject experiences no pain the intensity of the light is increased, and after an interval of a minute the test is repeated. This procedure is followed until the subject just feels pain at the end of the exposure. This threshold pain is said to be easily recognisable even by untrained subjects. "The sensation was that of heat finally 'swelling' to a distinct, sharp stab of pain at the end." At this point a radiometer is placed in the aperture in place of the forehead of the subject and the intensity of the radiation measured in gramme-calories per second per square centimetre.

1. Lewis, T. *Brit. med. J.* 1938, **1**, 321.
2. Lewis and Hess, W. *Clin. Sci.* 1933, **1**, 39.
3. Hardy, J. D., Wolff, H. G., and Goodell, H. *J. clin. Invest.* 1940, July, 1940, p. 649.

WOLFF and his colleagues found that pain in any part of the body raises the pain threshold in the skin in other parts as much as 35%. Having determined the pain threshold—the intensity of radiation which barely evokes pain—they proceeded to ascertain the threshold-raising action of various opium derivatives. The minimum effective dose of morphine sulphate was found to be gr. 1/120. The saturation-quantity, or the smallest amount with which the highest threshold-raising effect was attained, was approximately gr. ½; the corresponding figure for codeine phosphate was gr. 1. It took about ninety minutes for morphine sulphate gr. ½ to attain its maximum threshold-raising effect. In clinical practice most forms of pain are abolished by such a dose well within half an hour. They find, however, that at thirty minutes the pain threshold has been raised by only about 30% and that thereafter it continues to rise to a maximum of about 70% at ninety minutes. From this it is clear that in giving the customary "quarter of morphia," we allow a very liberal margin as far as intensity of effect is concerned; but reduction of the dose to gr. 1/6 would shorten the duration of the period of relief by about two and a half hours. On the other hand, if we push the dose to gr. ½, the only advantage (absence of habituation being understood) is to prolong the period of freedom from pain by a bare half-hour. Comparing the threshold-raising action of morphine substitutes, they found that gr. 1/20 (3 mg.) of Dilaudid was equivalent to gr. ¼ (30 mg.) of morphine; and gr. ⅓ (20 mg.) of Pantopon (known in this country as Omnopon) was equivalent to gr. ⅛ (8 mg.) of morphine sulphate. If pain preceded or occurred early in the course of the action of the opiate it reduced or neutralised the threshold-raising effect of these agents. If adrenaline was given prior to the opiate the antagonism between pain and the threshold-raising substances was stimulated, suggesting that heightened sympathetic activity is a factor in this antagonism. These researchers are working in a field whose limits are well defined—an entirely different technique would be necessary for the clinical pharmacologist investigating, say, the relative values of antacids in relieving gastric pain—but their methods are likely to be applied and elaborated by many workers in the field of clinical science.

SECOND THOUGHTS ON BREAD

THE official decision to include vitamin B_1 in white flour looks like being attacked from two sides. On the one hand are the conservatively minded, who ask what need there is for change and whether the step will not do more harm than good. On the other are those who favour the plan but think the amount of vitamin B_1 to be added is not sufficient. In his statement in the Commons Mr. ROBERT BOOTHBY did not disclose the dosage of vitamin B_1 or of calcium contemplated, but according to MORAN and DRUMMOND,[1] who are scientific advisers to the Ministry of Food, the extra vitamin B_1 will add approximately 100 I.U. to the daily intake. They take the average consumption of flour as 60 oz. weekly, from which it appears that the amount to be added is about 12 I.U. per oz., bringing the value

1. Moran, T. and Drummond, J. C. *Nature, Lond.*, 1940, **146**, 117.

of white flour up to about 20 I.U. of vitamin B_1 per oz. or 75 I.U. per 100 g. Such an addition is certainly better than nothing, but it will only make white flour equivalent in vitamin B_1 to wholemeal derived from wheat of the very poorest content.

Different kinds of wheat vary widely in the proportion of vitamin B_1 they contain. MORAN and DRUMMOND give the range for wholemeal (whole wheat) as 60–330 I.U. per 100 g., while the tables of BOAS FIXSEN and ROSCOE [2] give a range of 118–340 I.U. per 100 g. With a wholemeal flour having a value as low as 120 I.U. per 100 g. the consumer of 60 oz. of bread a week would receive 280 I.U. daily as against some 180 I.U. with the suggested reinforced white flour. Nevertheless, it is the large consumer of bread who most needs additional vitamin B_1, for his intake of other foods containing vitamin B_1 is small and his large intake of carbohydrate demands a lot of the vitamin. For him an increase in the content of flour from 75 to 120 I.U. per 100 g. would be well worth while.

In gauging what is worth while it is obviously fundamental to consider what is the human requirement of vitamin B_1. This has been calculated mainly by considering diets which have been found to prevent or produce beriberi, using the published tables of the vitamin-B_1 content of foodstuffs. For many foods these tables show a wide range of values according to their source; the values already cited for whole wheat are an example. The human requirement is thus only approximately known, and in any case it varies according to the weight, activity, physiological status and carbohydrate intake of the individual. The League of Nations Technical Commission on Nutrition gave 300 I.U. daily as the requirement of an adult man, but most experts in the field now place the value somewhat higher, nearer to 500 I.U. MORAN and BOOTH [3] consider that pregnant women and children need 700 I.U. daily and if these two classes of people are omitted they put the average daily requirement at 420 I.U. They have calculated the vitamin-B_1 content of the diets recorded in four recent dietary surveys in Great Britain, and conclude that half the population has a marginal vitamin-B_1 intake and the other half has an intake insufficient for full health and maximum growth. It is possible to dispute this conclusion. "Why," it is asked, "if our diets are as low in vitamin B_1 as all that does not beriberi appear?" The reply is that white flour contains an appreciable amount of vitamin B_1—it is not nearly as deficient as polished raw rice—and a full-fledged deficiency disease is thus unlikely to arise in wheat-eating countries. Moreover, one of the symptoms of partial deprivation of vitamin B_1 is lack of appetite, and this leads to a fall in the intake of food, and incidentally in the carbohydrate demanding vitamin B_1, until, with a diet not wholly devoid of the vitamin, a balance is attained with the body protected from complete depletion but functioning at a miserably low metabolic level. As MORAN and DRUMMOND say, "It is always difficult to relate suboptimal health to the lack of a particular nutritional factor," and it is especially difficult when the nutritional factor functions, as the B vitamins do, in the processes of energy exchange. One would not expect a partial deficiency of such factors to manifest itself except by feeble growth and lack of vitality, witnessing that metabolism is somewhat out of gear. At any rate, both in Great Britain and the United States, it is the opinion of those well qualified to judge that an increase in the vitamin-B_1 intake of the people would be one of the best ways of improving their general health, and there is no evidence to support the suggestion that reinforcement of bread with vitamin B_1 can do any harm.

2. Boas Fixsen, M. A. and Roscoe, M. H. *Nutr. Abst. Rev.* 1937-38, 7, 823; 1939-40, 9, 795.
3. Moran and Booth, R. G. *Chem. Indust.* 1940, 59, 533.

ABDOMINAL RIGIDITY

OF all the physical signs that help in the diagnosis of the doubtful abdomen, whether acute or subacute, none is more valuable than abdominal rigidity. Rigidity may be due to nervousness or malingering, and it may arise in lesions affecting the nerves to the abdominal wall in any part of their course, but these sources of error can usually be recognised with experience and eliminated by careful checks. True rigidity has come to be synonymous with mischief in the cœlomic cavity, and the extent of the rigidity is usually accepted as an indication of the extent of the underlying trouble. To the majority of surgeons, therefore, Dr. WRORK'S [1] contention that "Rigidity apparently confined to the musculature overlying a diseased intra-abdominal structure is in many instances a clinical illusion" will come as a bomb-shell. This is not the unsupported wisecrack of a youngster in search of publicity, but the result of a careful piece of research by a fellow in surgery on the Mayo foundation. WRORK worked with a tensionometer designed for the purpose by the physics research department, and tested on a hundred normal individuals, before it was applied to patients with abdominal disease. In no case was a difference in the tension of the two sides of the abdomen registered, nor was there any instance of quadrant rigidity. He suggests that the widely held belief in unilateral or segmental guarding may be explained by three common errors. First that the increased resistance offered the palpating hand by an intra-abdominal mass may be interpreted as due to muscular rigidity. Second that with one-handed palpation there is voluntary guarding as the hand approaches painful areas, and the examiner does not appreciate that this guarding is also affecting the other side. Third that, since tension is always greater over the rectus than over lateral muscles, the comparison of two areas at dissimilar distances from the mid-line may convey a mistaken impression of rigidity in the more central one.

WRORK has made out an excellent case and it is difficult to find any weak spots in his thesis. But to tell surgeons that there is no such thing as localised abdominal rigidity is like telling Hitler that there is no such thing as an Aryan. Most of us take considerable pains in examining our cases to compare mirror areas on both sides of the abdomen in sequence, using equal pressure with both hands. Most of us can remember instances where we have been led by local guarding of the muscles to the diagnosis of an acute cholecystitis, a retrocæcal appendicitis, or a tubal infection. Let us not bite

1. Wrork, D. H. *Proc. Mayo Clin.* June 19, 1940, p. 393.

the carpet, as Hitler is said to do when his pet beliefs are questioned, but determine to examine our cases still more critically and with greater impartiality. Let us check this somewhat revolutionary claim by clinical tests and by a tensionometer if we have the mechanical bent to make one. Then we shall either be able to tell Dr. WRORK where he gets off, or thank him for rescuing us from the domination of an ancient fetish.

Annotations

STERNAL PUNCTURE IN INFECTIONS

BONE-MARROW biopsy is now recognised as the surest path to the diagnosis of leukæmia, particularly when the peripheral blood-picture camouflages the true condition of the blood-forming organs. In disorders such as myelosclerosis, aplastic anæmia and pernicious anæmia it is less useful and in the rarer blood dyscrasias it is often done simply to exclude leukæmia. It is well to remember, however, that sternal trephine, as distinct from puncture, permits of histological study of the marrow, and its field of usefulness is therefore greater. These points were discussed last year by Hynes [1] in these columns. Moreover, sternal biopsy is the easiest and least dangerous route to the reticulo-endothelial system and the evidence that can be obtained by the hazardous procedure of liver or splenic puncture may often be got more readily from the marrow. In France study of the bone-marrow has been advocated in Hodgkin's disease, lymphosarcoma, secondary carcinoma and Gaucher's disease, but the results have not always been conclusive or even useful. There is more to be said for investigation of the bone-marrow in generalised infectious conditions of obscure origin where the reticulo-endothelial cells may harbour the invading organism. There is, in fact, evidence that the parasites of malaria and kala-azar can be tracked down in the marrow when search elsewhere has been unsuccessful. Less attention has been given to sternal puncture in the diagnosis of bacterial infections, but Ling and his colleagues [2] in Shanghai have carried out medulloculture in 38 patients suffering from typhoid and paratyphoid fevers. The usual operation with Salah's needle was performed and 0·5 c.cm. of marrow fluid was transferred to liver-digest broth. Of 110 medullocultures and an equal number of blood-cultures done simultaneously on the 38 patients there were 44 instances in which medulloculture produced the organism while blood-cultures were negative, and only twice was blood-culture alone positive. It was also found that the heavier inoculum from the bone-marrow made earlier bacteriological diagnosis possible, and in one patient the bacillus was recovered from the marrow a fortnight after the temperature was normal and when convalescence was well on the way. Despite the serological tests it is still of the utmost consequence to isolate the causative organism not only in the early days of illness but also in those patients admitted to hospital only when the disease has been active for some time. Whether medulloculture is, as these Chinese workers suggest, the method of choice in the recognition of the enteric fevers still needs proof, but if their technique makes it possible to diagnose even a few of the obscure pyrexias more quickly or more certainly it should be extensively used. At least these observations should stimulate interest in the diagnostic possibilities of examination of the bone-marrow.

FAMILY ALLOWANCES AT A UNIVERSITY

A SYSTEM of allowances has been introduced at Birmingham University for members of the non-professorial and administrative staffs in receipt of a salary not exceeding £700 per annum, and for weekly wage earners. It is not designed as a war measure, but as part of the permanent financial structure of the university and like the scheme at the London School of Economics is primarily an allowance for education. As from last February, when the scheme was introduced, the non-professorial and administrative staff are to receive £25 per annum for each child up to the age of 18. No allowance however will be paid for any child over 16 who is not receiving full-time education. Weekly wage earners receive 2*s.* 6*d.* a week for each child up to the age of 16, but no allowance for any child over 14 who is not receiving full-time education. The allowance is still paid if the parent is absent from the university on national service and his pay is made up to his university salary including family allowance. Family allowances are, of course, non-pensionable.

SEX DIFFERENCES IN MORBIDITY AND MORTALITY

IN human populations the rate of mortality of males exceeds that of females throughout nearly the whole span of life, an observation which dates back to the earliest statistical records. It seems, too, from the rather scanty evidence available, that the lower powers of resistance of the males to the processes leading to death are not confined to man, but are shared by other animals. For mankind, at least, it is easy to offer a partial explanation—namely, the social and environmental differences in the ways of living of men and women. Man is occupationally exposed, and socially often chooses to be exposed, to risks from which the female is relatively free. On the other hand such factors cannot explain the whole of the differences between the two sexes, particularly those associated with deaths in infancy and prenatal life. Here there seem to be inherent biological differences between the sexes, differences which may clearly continue to operate at subsequent ages in conjunction with differential risks from the environment. There are, however (as a classical author observed), very many ways of dying and any attempt to assess the factors responsible for the inferior survival value of the male must take them into detailed account. Such a study has recently been made by Ciocco,[1] using mainly data from the United States. Taking first the earliest stage of life, the evidence being the probable causes of death in stillbirths, there is apparent a probable interplay of genetic and environmental factors. Females predominate when the fœtal mortality is essentially the result of defective embryonic development, males when the placental structure is faulty or inadequate to safeguard the fœtus from toxic elements transmitted by the mother and still more so in cases of trauma at labour. The latter may well be the consequence of the sex difference in the rates of physical development, while in general these facts do not support the assumption that the male is inherently weaker or particularly affected by a lethal gene.

In discussing postnatal deaths Ciocco follows Pearl [2] in grouping them according to the organ-systems whose functional breakdown led to death. His principal findings are the higher mortality of males from chronic degenerative pathological processes (involving primarily the myocardium, the arteries and the lungs), from diseases in which the social environment may play a large part (alcoholism, suicide, gastric ulcer and skin cancer), and from those in which a higher risk of infection may be present (pneumonia, influenza, meningococcal meningitis and neurosyphilis). Females, on the other hand, show an excess of deaths from diseases involving the endocrine system and of course from those especially associated with pregnancy. Subdivision of these system-groups reveals, however, that the excess of one sex over the other

1. Hynes, M. *Lancet*, 1939, **1**, 1373.
2. Ling, C. C., Taur, S. S., Hsueh, P. C. and Yang, S. Y. *Chin. med. J.* 1940, **57**, 11.

1. *Quart. Rev. Biol.* March 15, 1940, p. 59 and June, 1940, p. 192.
2. *Amer. Nat.* 1920, **54**, 5.

is due to only some of the diseases included in the category, so that the so-called inferiority of the male appears specific rather than general. Analysis by age leaves the position no less complex. Mortality-rates are only an end-product, and Ciocco gives his attention also to the sex ratio of reported attack-rates. On the whole it seems that the sex frequency with which certain diseases are encountered in clinical practice (i.e., in a severity which brings people to their doctor) corresponds well with the sex differences in mortality. There is no pronounced sex difference in fatality once the disease process has reached a severe or moderately severe stage. Morbidity surveys carried out in the States are another source of information, but they give insufficient information for the assessment of possible sex differences in resistance or recuperative powers. What is clear from Ciocco's analysis is that neither sex shows a general superiority in vitality, but that each possesses a greater liability to specific and separate fatal conditions. Two important factors in these differences are certainly social behaviour and the influence of the structural and functional differences in the primary and secondary sex organs. Ciocco suggests that a developmental factor may play a more important part than is generally recognised—the rate and pattern of organic growth, in male and female. For instance, he quotes Klein and Palmer's conclusion that a higher rate of dental caries in girls than in boys is due to the fact that the permanent teeth erupt earlier in girls. Their "tooth exposure-to-risk" is therefore longer. The same developmental factor may well affect the risk of breakdown of other organs of the body.

ARMY MEDICAL ORGANISATION

LAST May Colonel T. B. Nicholls was writing a preface to the second edition of his book on the Army Medical Services,[1] and in that month the warfare on which it was based disappeared never to return. This would not have mattered had he written from the general to the particular. The old field-service regulations were written in this way. They laid down wide principles which seemed so elementary as almost to be obvious, but when an officer who had absorbed them found himself in a tight hole one of these principles would rise into his mind and he had but to apply it to the conditions with which he was faced. Colonel Nicholls deals with the medical services in the opposite way, from the particular to the general; and the particular form of warfare on which he bases his description is trench warfare on the western front in the last war. It is true that he mentions the North-West Frontier in his new preface, but in his chapter on the estimation of casualties he gives a list of "certain engagements" which were all of the western front. It is as though Gallipoli, Italy, Salonika, Egypt, Palestine, Mesopotamia, German East Africa, Persia, Murmansk and Archangel had never existed. Many of these might have produced data more applicable to today's conditions than any previous experience in France and Belgium. As a matter of fact they would not, for an hour's conversation with a young lieutenant of the R.A.M.C. will show that what he has been through is so different from anything that anyone went through in the last war that his six weeks' experience is of more value to him than that of all the major-generals, colonels and ageing majors that boil at not having been re-employed. Not that this book is of no use. It is full of valuable data that every A.D.M.S. or other administrator at the base or on L. of C. should have in his office and be able to refer to, though it is too heavy to be carried by the officer in a mobile unit.

There are two points on which disagreement with Colonel Nicholls is legitimate. It is wrong to say that "For medical units, mobility is the sine qua non." The strategy that based its operations on such a conception would fail to save the sick and wounded; no medical unit can do its work properly unless it "stays put." The mobile medical units are compromises; they are really transport units with a medical flavour. It is probable that the increase in speed has made this war more different from the last than the last was from the Napoleonic. This mobility has made the collection of wounded much more difficult, but if the new strategy is based on the idea that a medical unit can do its work of healing the sick and wounded while on the move, none of them will recover.

Colonel Nicholls is out of date when he writes "modern methods of surgery require very early treatment of wounds. An abdominal wound, for example, should be operated on within about six hours if the man is to stand any chance of survival; and in general it may be said that every two hours' delay means an extra week in hospital." This is the surgical thought of 1916; by 1918 surgeons were greatly in advance of it; but the experience of the Spanish war and the teachings of Trueta have revolutionised war surgery as much as the dive bomber and tank have changed the fighting. Surgeons are to blame because they have not driven this home to the medical administrator, but a medical administrator should have been sure of his ground before incorporating such a conception in a book to which the layman might refer. Colonel Nicholl's might revise his statement as follows. "Surgery requires very early treatment of wounds, and for the modern method to be of use it must be applied within six hours. Failing this it is necessary to employ methods that became effete early in the last war. Certain wounds, for example abdominal ones, demand less delay and every five minutes over four hours diminishes any chance of survival." To this the following corollary might be added. The aim of the medical tactician must therefore be to get the maximum number of casualties into the surgeon's hands within six hours; and the strategist who does not recognise this cannot expect a low death-rate or a high return of casualties to the active ranks of the community.

THE PENDULUM IN THE GENERATIONS

THE young child and his mother form a team, whether they like it or not. The actions of one affect the other and it is not difficult to believe that a false start in such a close relationship can make trouble later. Dr. John Bowlby[1] in an article on the influence of early environment on the development of neurosis gives his impressions of 150 children whose behaviour has been influenced by some hitch in this relationship. He does not claim to have made a complete analysis of the various situations—at most his findings are suggestive—but they do indicate how an abnormal emotional situation in the mother's own childhood may be reflected in her dealings with her child and provoke an abnormal response. He sees in this sequence a danger that neurosis may be perpetuated from generation to generation. Apart from emotional causes neurosis may originate from a specific event, such as the death or prolonged absence of the mother. He finds that separation of the child from the mother during the first few years of life is more likely to produce conflict and behaviour difficulties in the child than separation of the parents from each other; that, in fact, it is not so much a broken home as a broken mother-child relationship which does the damage. Long breaks have the effect of preventing the child from developing normal affection. As he grows, parents and teachers complain that nothing they say or do has any effect on him; it is of no consequence to him whether he is in favour or not. Many children of this type pilfer, and in his series Bowlby found sixteen such "affectionless thieves," fourteen of

1. Organisation, Strategy and Tactics of the Army Medical Services in War (2nd ed.) By Lieut.-Colonel T. B. Nicholls, M.B., R.A.M.C. (retd.) London: Baillière, Tindall and Cox. Pp. 496. 15s.

1. *Internat. J. Psycho-anal.* April, 1940, p. 154.

whom had had a broken mother-child relationship in early life. The emotional attitude in the mother most likely to provoke abnormal behaviour in the child is an unconscious hostility; this sometimes renders her over-solicitous and tiresome and at the same time unkind in trivial ways. She is the sort of woman who is impatient with whatever the child happens to be doing at the moment; if he is reading she thinks he ought to be running about in the fresh air; if he is playing with the soap in the bath it is time for him to get out; if he is racing round she wants him to be quiet. All the natural restrictions on a child's liberty are exaggerated, until he feels he is constantly being frustrated. Her hostility in such cases may spring from the fact that the child was originally unwanted, or because she is herself deficient in affection, aware of it, and feeling guilt because of it. Another common maternal attitude, he found, was an inability to stand hostility or criticism from the child. In these cases the mother is so uncertain of herself that she must be constantly reassured; she must be allowed to feel that she is the perfect mother. The child is trained to believe that the only feelings he must express to her are love and gratitude, and he suffers feelings of guilt whenever he has a hostile or critical impulse. Two practical points emerge from Bowlby's review of these cases. He suggests that separation of small children from their mothers should be avoided whenever possible, and that when a child is being treated for a behaviour difficulty a weekly interview with the mother, in which her own problems are traced back into her childhood, is often remarkably successful.

THE VAGINAL SMEAR

LARGELY owing to the work of Papanicolaou it has been recognised since 1925 that the vaginal mucosa of women undergoes certain cyclic changes during the menstrual cycle, and in animals such changes have been widely used in biological experiments with the sex-stimulating endocrines. The necessity for expert interpretation and the equivocal results obtained from vaginal smears in women has militated against the general adoption of the method in this country, but studies by Smith [1] have gone far to clarify the changes in the vaginal mucous membrane. There are apparently three zones in the epithelium of the non-pregnant vagina. First there is a superficial zone, several layers thick, of flat, elliptical and elongated cells with a small dark-staining nucleus and clear cytoplasm. Next comes the middle or cornified zone of flattened, larger, more palely-staining cells with pyknotic nuclei. The deep or basal zone is composed of two or three layers of small dark-staining cells with darker-staining nuclei and little cytoplasm. This is the germinative zone and between it and the middle zone are several layers of larger cells which become flattened into pavement cells as they approach the middle zone. These pavement cells abound in smears taken in the post-partum period—in fact it is their abundance that is the characteristic feature at this time—and since they appear in no other gynæcological condition Fletcher [2] suggests that their presence in a smear may be accepted as diagnostic evidence in cases of presumptive incomplete abortion. In support of his view he has taken a number of control smears in early, middle and late pregnancy. Termination of pregnancy at any stage results in an extensive denudation of the vaginal epithelium and destruction takes place as far as the outer cells of the basal zone, so that pavement cells in large numbers appear in a vaginal smear. The cells of the inner basal or germinative layer also make their appearance, so that when both germinative cells and their elder brothers pavement cells are seen in the same smear pregnancy can be fairly assumed to have terminated. A further finding of Fletcher in post-partum or post-abortum smears was the presence of degenerative mononuclears, with fragmented or even no nuclei. In smears from normal viable pregnancies or from normally menstruating women Fletcher was unable to find any of these three types of cell—pavement, germinative or degenerate mononuclears.

The technique of obtaining and staining the specimen needs little comment. Fletcher uses a modified Papanicolaou method for staining the smears, but he discards the glass pipette in favour of a swab of cotton-wool taken from both sides of the middle vagina. The swab is immediately wiped on a slide, which is transferred to equal parts of ether and 95% alcohol for at least an hour; if convenient it may be left in the spirit with impunity for a week before staining.

The vaginal smear is not likely to oust the Aschheim-Zondek test in the diagnosis of incomplete abortion, but it may prove by its simplicity, cheapness and speed to be a useful adjunct in the elucidation of doubtful cases.

1. Smith, B. A. *Anat. Rec.* 1929, **43**, 317; *Amer. J. Obstet. Gynec.* 1929, **18**, 347.
2. Fletcher, P. F. *Amer. J. Obstet. Gynec.* April, 1940, p. 562.

VARIATIONS IN THE ACTION OF ŒSTROGENS

BIOLOGY will hardly be an exact science until we can standardise the reactions of the living body. Conditions governing the responses of a given tissue are not identical at all times, and tissues which appear identical may react in quite different ways to a given stimulus. Investigation of the sex hormones is continually revealing discrepancies of biological behaviour, the causes of which as yet remain unidentified. Meanwhile data accumulate. During experiments concerned with the accurate assay of gonadal hormones Laqueur and de Jongh [1] gave small doses of œstrone once a week for a month to spayed mice. Twelve of these mice received less than 1 mouse-unit for a dose, and the other twelve were given doses of about 2 mouse-units. No exact uniformity of reaction was found. In many instances an individual gave a certain response on one occasion and a different response to the same dose on another; that is to say, the variations were seen not only between two individuals but in the same individual at different times. The variations were slight, and became evident only by the careful method of grading used, but they illustrate a fact which is appreciated by both the experimental biologist and the clinician. Wider vagaries in reaction to œstrogens appear when mice of different inbred strains are compared. Some notable examples are given in a recent paper by Bonser and Robson.[2] They employed three well-known strains of inbred mice, R III, Strong A, and CBA. In the CBA strain spontaneous mammary cancer does not arise, nor is it induced in the males by œstrogens; in the other two strains it is common and can be caused in the males by œstrone. To mice of these strains 3 mg. of the synthetic œstrogen triphenylethylene was given once a week. Some of the results are shown in the table.

Strain	Mammary cancer	Scrotal hernia	Interstitial tumours of testis	Cornification in coagulating gland	Degeneration in adrenal cortex
R III ..	+	+	−	+	+
Strong A	−	+	+	−	Slight or absent
CBA ..	−	−	−	+	Slight or absent

It will be seen that the different reactions in the three strains cannot be attributed only to general factors such as inequality in the rate of metabolism or excretion of the œstrogens, though such differences may exist. Clearly the assay of œstrogens based on the responses of a particular organ, however exact the method, contains the seeds of more than one fallacy. To predict the effect

1. Laqueur, E. and de Jongh, S. E. *J. Pharmacol.* 1929, **36**, 1.
2. Bonser, G. M. and Robson, J. M. *J. Path. Bact.* July, 1940, p. 9.

of a particular œstrogen on a particular organ we can be guided only by assays made on that organ in mice of the same inbred strain to which the hormone has been given in identical conditions. Even then our prediction cannot be exact, because of the different individualities within the same strain. The bearings of these remarks are manifold. One example will suffice—the failure of triphenylethylene to cause mammary cancer in Strong A mice, though œstrone has this action. As the authors say, had triphenylethylene been tested on Strong A and CBA mice only it would have been regarded as incapable of producing mammary cancer.

COUNTERACTION OF FATIGUE WITH VITAMINS

GERMAN science and medicine are affected by the Nazis' cultivated neglect of truth. Some of their papers would be interesting if true but are so openly vulnerable to criticism that it is remarkable that they should be published, in the German medical press, by people of recognised position. Prof. Theo. Morell [1] of Berlin has recently published a paper on counteracting fatigue by giving vitamins. Two fasting young men were made to take exercise on a fixed bicycle, and their energy output was measured when they had and when they had not received tablets of "vitamultin" containing dextrose, vitamin C, vitamin B_1 and compounds of nicotinamide, the total amount given being unstated. The effect in increasing energy output was striking, and since all the substances given are implicated in carbohydrate metabolism and oxidation-reduction processes it is highly plausible that this should be so. Prof. Morell, however, neglected to make any control experiments with dummy tablets. The two subjects reported a comfortable feeling as soon as the tablets got inside their stomachs and their output of energy immediately increased; this the observer called the suggestive stimulation (Suggestivschub). The energy output soon dropped but rose again after 15 minutes in what is described as the absorption stimulation (Resorptionschub). When one subject was treated with vitamins and the other not, the energy output was equivalent to cycling 42·7 and 26·7 kilometres respectively in 1½ hours. Whether energy output was really promoted by the vitamins or whether the young men simply pedalled away as good Nazis should to attain the result known to be desired is uncertain, but Prof. Morell accepted the evidence as sufficient for him to recommend strongly that "vitamultin" should be supplied to airmen and drivers of motor vehicles when called upon to make long sustained efforts. The claim should perhaps be examined.

1. *Dtsch. med. Wschr.* April 12, 1940, p. 398.

BACTERIOLOGY AT THE LISTER INSTITUTE

THE outbreak of war had an unfortunate paralysing effect on our organised medical research, more particularly on the work of the special institutes in London whose staffs were dispersed to the various sectors or to emergency public-health laboratories throughout the country. The Lister Institute, with the exception of its biochemical and biophysical departments, shared in the general exodus, but it had at Elstree a country home for its bacteriological staff, the division of nutrition was accommodated at Cambridge, while individual members of the staff found refuge in other research institutes. As a result, the latest annual report bears little imprint of disorganisation. It is impossible to comment adequately on the institute's widespread researches in bacteriology, nutrition and biochemistry, much of which has already been discussed in these columns, and this year only the bacteriological work will be reviewed.

The bacteriological division under the direction of Sir John Ledingham together with the serum (Dr. Amies) and the vaccine lymph (Dr. McClean) departments at Elstree have produced a large volume of work, part academic like the interesting and intricate studies of A. S. McFarlane and his colleagues on the chemical and physical properties of vaccinia virus, but much of it with a topical application. Virus work has been concentrated on vaccinia. The results obtained by McClean, in conjunction with Dr. R. G. Henderson of the London County Council's staff, on the inoculation of children intra- and sub-cutaneously with elementary body suspensions of vaccinia virus prepared from sheep strongly indicated that, with the vaccine, used immunity resulted only if cutaneous vesicles were produced. Thus, if secondary infection from superficial ulceration of the vesicles—perhaps the main objection to vaccinia—is to be avoided, proliferation of the virus in the skin or subcutaneous tissues is needed, and from rabbit experiments it seems possible that virus may be adapted to such growth. Of bacteriological work the studies of D. W. Henderson and P. A. Gorer on the synergic effect of antitoxin and sulphapyridine in the treatment of experimental gas gangrene and the similar studies of Amies on the treatment of experimental meningococcus infection have already been discussed in these columns. An important advance in the production of antityphoid serum has been made by the substitution of acetone-killed cultures, in which the Vi and O antigens are preserved intact, to replace the use of living cultures. Dr. Felix with Miss R. M. Pitt has continued his studies on the antigens of *S. typhi* and has shown that the Vi antigen has more than a directly toxic effect—as is maintained by Ørskov and Kauffmann—for it protects the O antigen against natural or immune O antibody and thus guards the whole bacterial cell against the opsonising activities of the serum. In view of the work of Craigie and Yen on the subdivision of *S. typhi* into a number of distinct types according to their phage-sensitivity, Felix and Pitt have tried, unsuccessfully, to demonstrate serological differences in strains of *S. typhi* corresponding to their phage-sensitivity—a result, as is remarked, very reassuring from the viewpoint of antityphoid inoculation and serum therapy. Dr. Schutze is conducting experiments in guineapigs on simultaneous immunisation against diphtheria and pertussis, and has reached some conclusions on the toxicity and virulence of *B. pestis* as a result of tests with unenveloped variants of the bacillus.

Investigation of the "diffusing factor" elaborated by certain bacteria and tissues, in which McClean has been a pioneer, has taken an interesting turn from the discovery by Chain and Duthie at Oxford that purified extracts of the substance from mammalian testes have a strong mucolytic activity. Following up this work, McClean has shown that purified bacterial filtrates also contain this mucinase which is antigenic and specific for each bacterium. Seminal fluid has been found by other workers to contain the mucolytic enzyme by means of which the spermatozoa penetrate the plug of mucus in the cervical canal, and this is doubtless the explanation for its abundance in the testes. Coördinated studies on the changes that occur in the serum of horses during immunisation are being carried out with the ultra-centrifuge and the electrophoresis apparatus; they have shown that the α and β globulins are especially associated with the antitoxic value of the serum. The preparation of refined antitoxins by the peptic digest method is being further investigated by Dr. Knight. In the field of experimental pathology Dr. Gorer has been working on the genetic factors concerned in tumour transplantation, while there are references in the report to studies on the metabolism of fat and on kidney function in the rat and to Professor Ledingham's work on the relationship of the sex-hormones to the Foà-Kurloff cell in the guineapig.

AT 2.30 P.M. on Friday, Aug. 16, at the British Postgraduate Medical School Lieut.-Colonel St. J. D. Buxton and Mr. H. L. C. Wood will give a demonstration of plaster technique. Applications for tickets should be addressed to the dean of the school, Ducane Road, London, W.12.

In England Now

A Running Commentary by Peripatetic Correspondents

PATHOLOGISTS are like dictators who deal with human material but whose contact with human beings is less than that of the local dustman. Since we started to run the local blood-transfusion service, however, we are meeting people, speaking to them as doctor to patient and glorying in a relationship which, momentarily at least, cloaks us in omniscience. And we are all as pleased as Punch about it. The relief from a repression which used to manifest itself only in the phrase "the clinical folk say so but, well . . . " has been immense and we are all new men. No longer does the shadow of being just members of an ancillary service thwart our lives. We are little clinical maestros ourselves, and we've lots to say about the number of apparently normal people with mild thyrotoxicosis, and we can and do discuss the treatment of collapse in blood-donors. Yes, we work from hell to breakfast just to prove that we can make a real success of a real doctor's job.

One thing that strikes every doctor and must have struck many laboratory folk afresh is the faith and confidence the public puts in those whose names happen to be on the medical register. We've noticed it particularly among our country donors, farmers, shepherds and woodmen. They come to have their blood grouped without the faintest idea of what is to be done and often one of them will say: "Do you think I'll be able to cast my peats next week doctor?"; or "I've still ten acres of turnips to hoe, so be canny." It is a pleasure to work in those country places with the scent of clover-fields and the broad accents of country folk drifting through open windows. We've had a lot of fun out of it too. Once we went to do blood-grouping at a village where the ladies had prepared a bedroom with spotless white sheets on the floor and walls and stripped the bed as for a major obstetrical operation. There was the schoolmistress whose democratic principles made her fly to her own doctor to have her group AB blood changed to something more common, and the robust policeman whose blood had been thinner than water since the Boer War when he drank himself drunk for a week. These people surprise us by their willingness to help and in one village of less than 4000 people there are now well over 200 volunteer donors. In the city the response has been about as good but townspeople know a great deal more about medicine than countryfolk, whose experience of doctors is often limited to the two essential visits in one life-time. We've also been blood-grouping in several unmentionable places and nothing has been more pleasant than to discover the competence of sick-room staffs in the services. We've heard London dance-band musicians, miners and dockers arguing with understanding about the physiology of the kidney. We've had less contact with the officers but the picture of a pilot wearing the D.F.C. with bar who nearly fainted when we pricked his finger is a reminder that courage may go with a distaste for us and our kind.

* * *

Some time ago we had our first serious air-raid when the hospital services worked well and the transfusion team gave its first bottles of blood for civilian air-raid casualties. There were little snags, of course, and we've learned how to correct them. One debatable point which arose from this baptismal raid was whether, when there are few people injured they should be taken to first-aid posts at all. The trouble is how are we to know how many injured there will be. But obviously the sooner shocked and wounded people are in hospital and the less man-handling they get the higher their chances of recovery. In mass raids the first-aid posts will get their opportunity, but with all our available facilities would it not be easier to transfer a small number of casualties immediately to the hospitals? At least, this was the feeling in the tea-room where we now talk a good deal less high politics and more common medicine.

* * *

Yesterday I walked over with a friend to see the local Conscientious Objector. He is a man of 25, of well-to-do parents who came down here some years ago to lead a simple life, paint rather quaint pictures, keep a shop in the village, and grow a beard. He has recently been excused by the local tribunal from military service on religious grounds. He is married and has children. We found this biblical figure working in his lovely garden. I talked with him and was impressed by his charming, almost boyish, frankness, and at the same time by a dignified composure. We admired his flowers and his paintings, we bought from his shop, and went home. I asked my friend if he knew anything of his earlier history. "Oh, he was at X," naming a public school, "but was so unhappy there that he left when he was sixteen. He told me he magnified some illness to get out of it." One could guess at the whole story now, the retreat from the turmoil of the public school, from urban conditions, from the very idea of army service, each time because his little force with its simple equipment was in danger of being annihilated or split up, each time the process being rationalised on health or religious grounds, which I suppose corresponds to "previously prepared positions"; retreats not from reality, but from the more tiresome forms of it. We talked on and both of us had little doubt that if this man had been forced into the army he would have broken down and very likely have spent the rest of his life in that penultimate retreat of all—a state of schizophrenia. There must be a lot of C.O.s who save the Government any amount of expense by becoming C.O.s.

Yet we are all guilty of little withdrawals from the unpleasant at times, often quite unconsciously. I once made an almost Newtonian discovery which illustrates this. I was living with a lot of other men and we all shared a bathroom. Each of us used to shave and bath there every morning. Some had hot baths and some cold, and I always knew which water was running in because the hot-water tap used to make little explosive noises which interrupted the sound of flowing water. I used to lie in bed and time them. Then I made this remarkable discovery: although the cold-bath men were in the bath for a much shorter time than the hot-bath men, as deduced from the splashing noises, they were in the bath-room longer. What happened was that with the grim reality of the cold bath ahead of them they lingered, pondered, and dawdled over their shaving.

* * *

I was drinking lager in a bar full of working men when Hitler's peace speech came over the air. There was a breathless and beaming silence; no-one wanted to miss a word. "They might be listening to Jack Warner," the old waiter whispered in my ear; he had come in from the dining-room, regardless of his hungry charges. I looked round at the pleased faces of Hitler's enemies, but I thought the waiter had got it wrong. Their faces did not show the intelligent amusement accorded to Mr. Warner—they wore the indulgent smiles reserved for Donald Duck in one of his rages.

* * *

Whatever the paucity of information that comes to the hospital with a patient, there is invariably an insatiable quest for reports about him. All the case-papers go as a matter of course to records office and personal notes from the doctor in charge of the case to the medical officer of his unit, but there is in addition a constant quest from all sorts of sources, often long after the patient has left the hospital and his case-sheets have gone to their rightful home. When the patients are allies, the quest for information appears to be greater than ever. Sometimes we are asked to send lists, sometimes someone is sent to collect information and very often both things happen about the same time for the same set of patients. The more varied the nationalities concerned, the greater the number of seekers after information and the greater the difficulty of disposing of the patients, for many deities have to be consulted and there is universal reluctance to see a dispersal of ewe lambs that makes administration and ultimate return to units more difficult; nor is it always desirable to send allies of too many hues to the same auxiliary hospital. Once when it was considered necessary by our French colleagues to take back to their native land as many men as quickly as possible a doctor arrived unexpectedly with a lorry one evening and said he desired to take away with him in an hour thirty men to join a ship which was sailing for France early the following morning. He

explained that they would go to a convalescent camp in France and we decided to let him have his quota rather against our better judgment. A list was hurriedly prepared and the men paraded. We explained to the doctor that we must take them to the dining-room for some sort of meal before they were allowed to go and our visitor consented to this delay, apparently in the belief that we wished to make some kind of manifestation. We had once made a manifestation on a visit to France some years previously and knew better than to repeat the experiment, but we gave them food and bade them a cheery au revoir before the rather pathetic little party rolled away down our avenue in high spirits and with voluble protestation of enthusiasm for their treatment with us. On one occasion we had great difficulty in persuading to leave the hospital a Pole who would persist in visiting an ill compatriot to assure him that his death was imminent. He was most unwilling to go away while his friend remained with us.

* * *

In discharging patients the one faux pas that must be avoided at all costs is to send convalescent patients of one service to an establishment of another. Once we were sufficiently misguided to send three naval ratings to an Army convalescent depot simply because we thought that they would benefit from the treatment it had to offer. We failed to notice in the bustle of a convoy that they belonged to the rival firm. Abject apologies followed but we were made to understand quite clearly that our precipitate action had raised grievous issues affecting pay and clothing that would undoubtedly have serious repercussions.

Sometimes factors other than the purely medical influence the disposal of patients. These may turn upon the personal inclination of the patient—a desire not to be separated from a relative, a wish to be sent to an auxiliary hospital near his own home and the like, or even upon such a slender thread as the persuasive eloquence or strategy of the commandant of an auxiliary hospital. Many have found that to stand and wait is one of the most trying jobs in this world, especially when the ship is dressed for action, and the good ladies whose houses have been turned into auxiliary hospitals are rarely patient waiters. Their methods of soliciting patients are varied and it is interesting to assess the success of conflicting techniques.

Behind all these deliberations on the disposal of patients—and for that matter their admission—there loom two shadowy figures armed with considerable if ephemeral authority—the movements officer and the hospital officer himself. Without the blessing of the movements officer it is apparently impossible for the Army to move at all in parties more than nineteen strong. He remains a wraith in misty seclusion, possibly pulling little levers in some disused tunnel but bellowing through the caverns if twenty patients are moved without his authority—slow to move to anger, slow to move at all, but terrible in wrath. The hospital officer is a more concrete proposition. He is a glorified father confessor to whom we relate our sins of omission and of commission. He is, in the main, a friendly soul, often sorely tried and that not always from the periphery. Sometimes he abets us in our unequal struggle with the powers that be for necessary equipment; sometimes he implores us to send patients to a certain auxiliary hospital for the sake of peace; sometimes he arranges the transfer of special cases to hospitals in other areas, a job apparently simple but not always so, for there are hospital officers and hospital officers. We address to him many stupid forms in triplicate in the course of a week and of correspondence three bags full.

* * *

It had been a busy week. On Saturday night I was late to bed, and when just falling asleep, was disturbed by two flashes followed, after a decent interval, by two heavy crumps. "A thunderstorm," I murmured. My wife, rightly as it turned out, re-diagnosed the disturbance as hostile action but added, no less rightly, that, as we could do nothing about it, we had better go to sleep. Sunday morning was busy and I looked forward to a snooze in the afternoon but the local military, who are charming and cannot be denied, pleaded for a game of cricket and, rather reluctantly, I turned out. It was a lovely afternoon and we batted first. They provided tea and we finally won by 15 runs with only ten minutes in hand. (Incidentally, I made 27; mostly off the edge it is true, but none the less, 27.) Afterwards we had a pint (or was it a pint and a half?) in the local. In short it was a most satisfactory afternoon of peace snatched from the atmosphere of war and I reflected, like many other cricketers, that it is a thousand pities that Hitler and his friends have never learnt to play this most difficult and fascinating game.

Parliament

FROM THE PRESS GALLERY

AN amusing little interlude, which is likely to be long remembered, took place in the Commons on Tuesday of last week as a preliminary to the House going into secret session for a debate on foreign affairs. It had been announced a week previously that the Government were ready to fall in with the wishes of the majority of members as to whether the discussion should be public or private, or whether it should be partly one and partly the other. A good many members have been anxious lately about the growing frequency of secret sittings, which ought, in their view, to be confined to exceptional circumstances. But the Prime Minister in a short speech, which charmed every member even if he was not converted by it, soon put the issue beyond doubt. Mr. Churchill very adroitly suggested that "some of the newspapers" preferred that the debate should be in public, and that "the Government should take the nation and the enemy fully into their confidence" and let the whole world see plainly exactly where they stood in relation to other countries at this critical juncture. There was a ripple of laughter throughout the chamber when he drily remarked that after the House had come to a decision, which would be free from any influence on the part of the Government, Mr. Butler, Under Secretary for Foreign Affairs, would make a statement and he understood Mr. Butler had taken the precaution to provide himself with two speeches both doubtless excellent but one rather longer than the other.

The majority of the House were now eager to start the real business of the day, and Lord Winterton, who boldly championed the case for a public sitting, was greeted with cries of "Divide." He strongly urged that there was no justification for holding six secret sessions in less than a year, when only seven were held during the whole of the last war.

Mr. Churchill had deliberately framed his motion in such a way as to permit of debate, and taking advantage of this the dissentient minority threatened a lengthy discussion on a point of procedure. This attempt, however, was neatly foiled by Sir William Davison who promptly "spied strangers" and thus compelled the motion that strangers do withdraw to be put to the vote forthwith.

The Emergency Powers Bill which received the Royal Assent on Aug. 1 is a measure which strikingly illustrates the abnormality of the times. Parliament, reflecting the mood of the nation, has shown itself ready to grant the executive almost any powers necessary for the efficient prosecution of the war, but this bill makes a serious inroad into our ordinary judicial system and sets up special courts for the trial of offences in certain areas in event of emergency. When the bill was before the Commons in committee a good many members, irrespective of party allegiance, felt that in view of the far-reaching powers of these special war-zone tribunals, including the passing of the death sentence, there should be adequate safeguards in the shape of an opportunity for a review of the special courts' decisions. It was pointed out that trial by jury necessarily disappeared because of the conditions prevailing at the time which the measure contemplated. After a long debate the Government eventually gave way on the point. Consultations subsequently took place as a result of which an agreed amendment was framed and inserted in the House of Lords providing for the review of decisions of the special courts by not less than three persons who hold or have held high judicial office in all cases in which sentence of death is passed, and "in such circumstances as may be provided by the Regulations." The Home Secretary also agreed that provision ought to be made for the review in suitable circumstances of cases in which sentences less than the death sentence were imposed.

QUESTION TIME

Emergency Medical Service

Sir ERNEST GRAHAM-LITTLE asked the Minister of Health whether the committee presided over by Mr. Colville had reported on the provincial arrangements for the Emergency Medical Service; and, if so, whether he could make a statement on the subject, particularly regarding that committee's report on conditions in London.—Mr. M. MACDONALD replied: Mr. Colville and his colleagues have reported on the provincial arrangements and recommended certain administrative changes which I have adopted. These changes consist mainly in devolving more authority upon my senior regional officers, who will work in closer collaboration than hitherto with the hospital officers in each region, and will be able if necessary to give formal directions to the hospital authorities. Another change has been a closer liaison, both centrally and locally, with the medical branches of the Services and the formulation of plans for common action in certain contingencies. As to London, Lord Chatfield (who succeeded Mr. Colville on the commission) and the other members of the commission have reported to me verbally this week and recommended certain changes in the administrative organisation and in the arrangements for first-aid posts, which I am now considering with my advisers.

Problems of War-time Medical Education

Mr. WALTER GREEN asked the President of the Board of Education whether he was aware that students of the London School of Medicine for Women were required to take part of their training at the Three Counties Hospital, Bedfordshire; that there was no accommodation in or near this hospital at which they could reside; that there was no public means of conveyance from the nearest places at which they could find lodgings, which were extremely dear; that there was no provision in the hospital for the supply of meals to these students, and no common-room they could make use of; that they had to take the luncheons they brought with them in the pathological laboratory; that the facilities for teaching were extremely inadequate; that it did not accommodate normal surgical cases, and had no outpatient department; and, as a number of the students were the holders of scholarships towards the cost of which the Board of Education contributed, would he take steps to remedy the defects indicated.—Mr. HERWALD RAMSBOTHAM replied: I am informed that accommodation at reasonable charges is available in the neighbourhood of the Three Counties Hospital with transport facilities. A canteen has been opened and a common-room will shortly be available. Making allowance for inevitable war-time difficulties, the teaching facilities at the hospital are satisfactory. There is no outpatient department, but the school, the authorities of which have furnished me with a full report, has arranged that students shall have extra opportunities for outpatient work during the remaining 2½ years of their course in London.

Sir ERNEST GRAHAM-LITTLE asked the Home Secretary if he was aware that circular 2080, dated July 3, issued by the Ministry of Health, contained in paragraph 3 a prohibition that precluded from study at the leading hospitals refugee alien doctors who had been admitted in limited numbers by express permission of the Home Office, on the advice of its medical advisory committee, to take a medical qualification in this country; and would he take steps to mitigate this prohibition which rendered that permission nugatory.—Sir JOHN ANDERSON replied: The question which my hon. friend has in mind is, I presume, whether doctors of enemy nationality can be allowed to work in hospitals which provide treatment for members of H.M. Forces. I propose to review this matter in consultation with the Minister of Health and the military authorities.

Free Milk

In answer to a question Mr. R. BOOTHBY said that it was as yet too soon to give any close estimates either of the cost of the administration of the National Milk Scheme, or of the value of the milk to be distributed under the scheme. The former might amount to £800,000 in the first year, and the latter to £15,000,000 on the assumption that there will be 2½ million beneficiaries.

Sir PATRICK HANNON asked whether, in connexion with the proposed extended distribution of the national milk powder to welfare centres, medical men who preferred proprietary brands of special food would be allowed, as hitherto, to have them, or whether any change in this practice was contemplated.—Mr. BOOTHBY: The national milk powder to be distributed under the scheme will be issued by the local milk officer either direct or through infant-welfare centres where the responsible local authority is prepared to coöperate in the scheme. These arrangements are being made for the purpose of simplifying distribution; and the amount of national milk powder so distributed will not exceed the quantity which is required to meet the needs of recipients of dried milk under the scheme—i.e., for those infants up to the age of 12 months for whom medical certificates have been received by the milk officer that such milk powder is to be supplied in place of liquid milk. The powers of local authorities to supply proprietary brands of dried milk outside the scheme are not affected.

Mr. G. A. ISAACS asked the President of the Board of Education how many London education authorities for secondary schools made provision for the supply of free solid meals and free milk, respectively; how many children received such meals or milk or both; and whether a 50% grant was made for this purpose or was now increased by 20% as for free meals for necessitous children in elementary schools.—Mr. RAMSBOTHAM replied: The London County Council is the education authority for the whole of the administrative county of London. In the twelve secondary schools maintained by the council which are now open there are at present no school canteens, but it is expected that they will be reopened shortly. It is not the practice to make direct provision of free meals or milk in the London secondary schools, but in cases of need dinner grants are made in order to assist the parents in paying for meals at school for their children, while, in addition, many parents receive maintenance allowances which can be used for the purchase of meals and milk. Expenditure by local education authorities on the provision of meals and milk in secondary schools is eligible for grant at the rate of 50%; the increased rates of grant announced in circular 1520 are applicable only to elementary schools.

Occupational Therapy for the Wounded

Sir ERNEST GRAHAM-LITTLE asked the Minister of Health what steps were being taken, and by what Government departments, to make provision in military and civil hospitals for occupational therapy to hasten the resumption of service by wounded men; and what steps were being taken, and by what Government departments, to develop a national system of rehabilitation so that by means of specialised training and the establishment of specially organised workshops service men who were unfit for further military service might be returned to civilian life with minimal disability.—Mr. MACDONALD replied: Occupational therapy is provided for wounded men at the special orthopædic centres forming part of the emergency hospital scheme administered by the Secretary of State for Scotland and myself, as well as at Ministry of Pensions hospitals and the fracture or orthopædic departments of a number of general hospitals in the scheme. As to the second part, arrangements are being considered in concert between the Ministries of Health and of Pensions and the Department of Health for Scotland, with the appropriate professional experts. Our aim is to secure a coördinated system of rehabilitation designed to produce the maximum restoration of working capacity.

Training Midwives in Analgesia

Dr. EDITH SUMMERSKILL asked the Minister of Health how many authorities administering the domiciliary midwifery service were training their midwives in the use of Minnitt's apparatus for the relief of pain at childbirth; and how many were still not exercising this power.—Mr. MACDONALD replied: The information available in my department shows that 44 out of 188 local supervising authorities in England and Wales had, on Dec. 31, made arrangements for training midwives in their areas in the administration of analgesics at childbirth. I have no power to give directions to local supervising authorities in this matter, but I hope that any authorities which have not made such arrangements will consider the desirability of doing so as opportunity offers.

Medical Supplies for China

Sir ERNEST GRAHAM-LITTLE asked the Under Secretary of State for Foreign Affairs whether the closing of the Burma Road would entail the stoppage of all Red Cross and medical supplies for China, or whether special exception would be made in these cases.—Mr. R. A. BUTLER replied: Red Cross and medical supplies are not within the categories of goods the passage of which by the Burma road is forbidden.

Letters to the Editor

A REINFORCED LOAF

SIR,—The success which has attended the intervention of a Committee of the Surgical Section of the Royal Society of Medicine with the Prime Minister in favour of an official inquiry into a new form of breast-plate for the troops prompts me to ask your help in approaching our profession with regard to perhaps an even more important matter—namely, the supply of a war bread adequately constituted both as regards its protective and energising value.

In the debate on July 18 the Parliamentary Secretary to the Ministry of Food, introducing a new scheme for a war bread, made a veritable song and dance on the "unprecedented and indeed revolutionary step" of adding a synthetic vitamin B_1 to the white flour which had been previously deprived of its wheat germ and consequently of its main source of vitamins. A correspondent in your last issue very properly, in my opinion, satirizes the Minister's extravagant expressions of satisfaction, which is not shared perhaps by all who have expert knowledge of this subject. In the course of his speech the Minister dwelt upon several alleged drawbacks of wholemeal of the type brought into use in 1917 during the last war. His principal indictments were the (1) alleged unpalatability, (2) indigestibility, (3) lack of keeping qualities, and (4) general and invincible preference on the part of the community for white bread. He is probably unaware of the careful scientific inquiry made into these points by a Committee of the Royal Society, "on the digestibility of bread," which completed its report in March, 1918. The report furnishes a direct negative to all these allegations. Experiments conducted on strict scientific principles demonstrated: (1) that there were no symptoms of indigestibiity in healthy subjects, or even in invalids, (2) there was a satisfactory increase in weight under its use, and (3) only a very small minority, less than 8%, expressed a preference for ordinary bread after trial of both. With regard to the alleged superiority of keeping-qualities of white flour, the Minister produced no evidence supporting his assertion, and it is challenged by the millers of stone-ground wholemeal flour, who declare that this quality depends largely upon the treatment of the wheat between arrival and milling. The assertion is further contradicted by the experience over a number of years with a meal produced by milling the whole of the wheat-berry at one operation.

It is difficult to understand the apparent reluctance of the present Food Ministry to adopt the measures used in the latter part of the last war by the then Ministry, acting on the advice of the committee of the Royal Society working with Lord Rhondda. That experiment was conducted on a nation-wide scale. Its astonishingly satisfactory effect on the general nutrition of the people was attested with final authority by the vital statistics of the period while it was enforced. One of its principal provisions was the supply of a wholemeal war loaf. The method now recommended by the Ministry involves the extraction from wheat of the major part of its vitamin content and subsequent restoration to the war loaf of one element only of the valuable ingredients taken away—namely, vitamin B_1—in a synthetic form as contrasted with an organic form. There will probably be general agreement that the organic vitamin is in every respect superior to the synthetic product. The Minister admitted further that it would "take some months" to supply this synthetic addition. Why should not the Minister, since he recognises the desirability of this vitamin, effect its restoration by reintroducing the wheat germ into the flour and so at once produce a bread of a proper nutritive value.

What are the circumstances which explain this resistance to the provision of a wholemeal bread? May they not be found in the fact that the entire industry of flour milling in this country is now for practical purposes concentrated in one gigantic combination which approximates to the position of a single trust, inasmuch as two private and interrelated firms, with the Wholesale Co-operative Society as their sole rival, control the whole production of flour. Any departure from existing practice must mean a serious disturbance of invested capital amounting at this time probably to something like twenty million sterling and the loss to the companies concerned of the highly profitable by-products of milling white flour.

The fourth report from the Select Committee on National Expenditure published last May, devoted as it is to a detailed and critical examination of the activities of the Food Ministry, emphasises the complete lack of any scientific planning of a war diet by the Ministry. The gist of the report is contained in this sentence: "there is some ground for our apprehensions that programmes are being settled on the basis of a rough and ready compromise between various interests and not on the basis of a plan scientifically devised in the interests of the country as a whole"; and the significant suggestion is made in a subsequent paragraph that "when compromise programmes are adopted as a result of interdepartmental discussions, there should be some authority to survey the position from the point of view of the interests of the country as a whole." It was because of this devastating report that the Ministry hastily collected an advisory committee which came into being on June 4—nine months after the outbreak of war!

It is surely indisputable that the scientific feeding of the nation in war-time is a matter in which medical men are primarily concerned. There is in existence a very influential committee, known as the Committee of Reference, including the presidents of the Royal Colleges in London and other important medical corporations. This committee has not as yet been overworked and its sessions have been infrequent, but I suggest that it offers a nucleus of expert medical authority which, if the profession expressed a wish in this direction, might usefully take charge of this vitally important matter, and its independence of any Government department would ensure public confidence in its findings.

House of Commons. E. GRAHAM-LITTLE.

SIR,—I was horrified to learn that bread is going to be "doctored" by a Government department. We all recognise that an insufficient intake of vitamins and calcium is undesirable; but it is not equally recognised that an excess of these substances is also hurtful to health. In our book "High Blood Pressure" (Oxford University Press) we have given particulars of calcium balances; we found that the strain on the kidney when it is called upon to excrete an excess of calcium is considerable. Levin and myself have shown that a moderate administration of calcium has a profound influence on the character of the electrocardiogram (*J. Physiol.* 1937, **89**, 53). In an investigation not yet reported we found that an excess base intake profoundly alters the composition of the blood-plasma; and Prof. Duguid has kindly demonstrated to me the damage caused by calcium intake in the kidneys of rats. It is quite possible that excessive calcium intake may be an ætiological factor in arteriosclerosis. All this goes to show that people who talk of "ideal meals" are talking nonsense. There is no such thing as an ideal meal. All depends on the momentary requirements of the individual, and these requirements are conditioned not only by the food consumed during a day but also by what has been consumed yesterday and the day before. Milk no doubt is an excellent food, but to a person who has already had a surfeit of protein and calcium it is a poison. The only way to plan scientific diet is, first, to find out the exact requirements of the individual for particular food ingredients and then to arrange a weekly diet accordingly. To a man who consumes an ounce and a half of bread a day the added calcium may do no harm; but to a person who eats 1½ lb. of bread a day and drinks hard water it may act as a slow poison. There are a number of authorities with expert knowledge of the different ingredients of foodstuffs, but this knowledge is of very limited value. What is necessary is a science which will tell us the exact individual requirements for each particular food ingredient. Until such a science is founded the doctoring of food can do no good; on the contrary it may easily become a public danger.

Liverpool. I. HARRIS.

PHYSICAL TREATMENT OF INJURIES

SIR,—We are now hearing a good deal about the provision of physical treatment for the war injured. It is said that every general hospital of over 300 beds may be

provided with a massage department, and orthopædic centres are in addition to have remedial workshops. This is all right as far as it goes, but it hardly goes far enough and a time-lag of twenty-two years to catch up with 1918 seems a bit long even for Britain.

This business of rehabilitation after accidents (and war injuries are accidents to everyone except insurance companies) is surely a case in point. How many of the staffs of the under-300-bed hospitals realise what can be done for a few pounds by an intelligent carpenter or handyman? Let them make a start with the patients that they now have, so that the germ of effective after-treatment is there to develop independently of expensive workshops, electrical apparatus and outworn tradition.

The older surgeons (our bosses) say "Ah, yes, gymnasiums; very useful we found them in 1918"; or "occupational therapy: all right for the neurotics." But it isn't pure gymnastics or occupational therapy and it is still less massage that is wanted. It is not the mixture as before, but a sort of physio-therapeutic sulphonamide compounded of a few overhead pulleys and bits of rope, twist grips on the wall and a carpenter's bench, with maybe a bicycle, a few games and a rowing machine. It costs about £20 for materials, but it's worth a lot when you've got it.

London. ERIC I. LLOYD.

SIR,—In your leading article of Aug. 3 you say "The suggestion made originally by the interdepartmental committee, and recently supported in a memorandum from the British Hospitals Association to the Minister of Health, that a national fracture service should be established in the voluntary hospitals is not really feasible; the voluntary hospitals are too centrally placed to provide for the wide regions they would have to serve."

The memo of the B.H.A. made no such suggestion. What it did was to urge that in setting up a fracture service the Ministry should not fail to make the fullest possible use of facilities existing in the voluntary hospitals. Of these there are over 1100, large and small, covering the whole country, quite a number of which are within a short distance of the nineteen referred to in your article as well distributed. Your rejection of them as "too centrally placed" would therefore appear to require explanation. In your opening sentence you recognise that less than 50,000 of the 200,000 fractures that occur annually in peace-time are treated in hospitals with a fully organised fracture service. The problem is how to make up this deficiency now that the restoring to usefulness of the wounded soldier and the injured citizen has become a matter of such paramount importance to our national effort.

The task, we suggest, can only be carried through effectively and economically by building upon existing foundations, that is by bringing into the scheme the voluntary hospitals where something like 90% of fractures are normally treated.

R. H. P. ORDE,
Hon. Secretary, British Hospitals Association.
12, Grosvenor Crescent, S.W.1.

*** We did not intend to suggest that the voluntary general hospitals should be excluded from the scheme for a national fracture service, but in order to obtain a wide enough distribution of fracture clinics *all* E.M.S. hospitals will have to be considered, the voluntary hospitals among them.—ED. L.

SIR,—At the end of your leading article on the treatment of fractures I was astonished to learn that only one of the orthopædic hospitals has its own hydrotherapy department. You do go on to say, however, that some of the converted mental hospitals have bath equipment which might be reconstituted for the purpose. This hesitation to make full use of methods of treatment of proved value surely needs some explanation. Among the various hydrotherapeutic measures applicable to the after-effects of war injuries the therapeutic pool occupies pride of place. I drew attention to its advantages earlier this year (*Lancet*, 1940, **1**, 683). When a patient suffering from joint stiffness or muscular rigidity finds that movements which were difficult or impossible become comparatively easy under water, he is encouraged and strengthened in his determination to persevere in his efforts. In dealing with a rigid limb one of the first essentials is to get the patient to relax and this can be more readily accomplished in a warm pool than under ordinary circumstances.

The excellent results obtained by the late Dr. Fortescue Fox in the last war by the employment of hydrotherapy in the treatment of wounds and injuries are surely not forgotten. It is therefore all the more surprising that ample provision has not been made for the continuation of his great work.

Harley Street. M. B. RAY.

REACTIONS TO AIR-RAID WARNINGS

SIR,—The paper by Dr. Rosenberg and Dr. Guttmann in your issue of July 27 stimulated me to find out the effects of anticipation on a small sample of the population at risk in an area where there have been more than 50 air-raid warnings in 5 weeks. Few bombs have been dropped and little damage to property or loss of life has occurred. I serve an outpatient medical clinic with a monthly turnover of about 160 patients.

Of 179 patients seen since intensive warnings began, 21 (or less than 12%) admitted to symptoms provoked by the sounding of sirens. These fell into three main age-groups: (1) a small group of children from one to four; (2) the largest group of women between thirty-six and fifty-four; (3) a small group of elderly women over sixty. Children of school age, adolescents, and men of working age admitted no symptoms.

The symptoms may be classified into psychological and somatic. Psychological symptoms were: insomnia on nights when there were no warnings, a fear of being alone which persisted between warnings and a typical displacement, a fear that the roof would fall in, though the patient spent the danger period in a shelter. Somatic symptoms were distributed through every system in the body.

Muscular: tremors (4), tics (1), exacerbation of rheumatoid arthritis (1).
Cardiovascular: true angina (1), palpitation (2), pseudo-angina (2).
Digestive: diarrhœa (1), turning-over sensation in epigastrium (1), severe proctalgia (1).
Excretory: frequency (1).
Reproductive: menorrhagia (1), pruritus vulvæ (1).
Respiratory: asthma (1).
Thermostatic: excessive sweating (1).

Some patients suffering from syndromes reputed to have psychological determinants manifested their fear in another system; for example, a true angina developed intense irritation of the vulva every time the siren sounded. An eczematous boy had his first attack of asthma in a shelter, and a tic douloureux developed anginal pain. On the other hand two cases of colitis, a case of asthma and a case of migraine continued to improve under treatment. Hyperpietics tolerated warnings badly, shook and sweated when the sirens sounded and could not sleep again.

Of purely psychological cases, three depressives were aggravated and two improved during this period. Four anxiety cases were aggravated for one improved, an obsessional patient continued to improve and while one mild paranoiac improved another had to be admitted to an observation ward.

These figures though small confirm the findings from the Maudsley hospital.

FRANK BODMAN.

PLASTER

SIR,—It is saddening to see a surgeon of Mr. Ogilvie's eminence supporting such a colossal fatuity as he has championed in his letter in THE LANCET of Aug. 3. Mr. Ogilvie wonders if I have not missed the point in your leader of July 13, where it was suggested that the dental officer should lead the emergency plaster team in the treatment of war injuries. I have not missed the point. I think that the dental officer is utterly unqualified for such a position, especially when, as I have pointed out, there are hundreds of young men in the Services with experience in plaster technique who are now employed in other spheres of medical and surgical activity. There

are, moreover, many orthopædically trained women who, because they are not state-registered nurses, cannot get employment in emergency surgical centres. If these young people were allocated to the work for which they have been trained, the occurrence of the "bottleneck" to which Mr. Ogilvie refers would be obviated.

I did not wish to convey the impression that plaster work is difficult and regret that Mr. Ogilvie should have gathered such an impression from my remarks. I do suggest, however, that to be an efficient plaster worker one should have had practice and training, and even the most enthusiastic apostle of muddle and makeshift cannot claim either of these qualifications for the dental officer.

Mr. Ogilvie has my assurance that I have no "trade-union bias" in this matter. My letter was prompted by a desire to ensure that the injured should have the best possible treatment. We are on common ground when he states that this is a matter of saving lives. We have a better chance of saving limbs as well if we are in a position to utilise the reserves of trained people who, as things are at present, cannot possibly be in plaster teams, and in all probability will not get a game at all.

Manchester. HENRY POSTON.

SIR,—Many members of the massage corps formed by the Chartered Society of Massage and Medical Gymnastics have been trained in plaster work at orthopædic hospitals. A considerable number have taught this work. Hospital authorities who require plaster teams should write to the director of the corps (Mount Lodge, Amersham, Bucks), who will probably be able at once to meet their requirements. It would be a pity to import dental surgeons into this field until this supply of trained workers has been fully exploited.

D. HARCOURT KITCHIN,
Editor, *Journal* C.S.M.M.G.

THE FRENCH COLLAPSE

SIR,—In reply to Mr. Maxwell Ellis's letter in which he criticises the opinion of your Medicus M.P. there is surely little doubt that Léon Blum's *front populaire* first started the rot. The 40-hour week, the numerous strikes and the Communist propaganda undermined the morale of the French workers and later of the French soldiers. An Englishman living in Paris for many years has confirmed all this to me and the French workers themselves have acknowledged it to him. Now Mr. Strauss, M.P., in the *Tribune* attacks his late Communist comrades and states that investigations have proved the allegations of war sabotage against the French Communist party and the efforts to create dissension between the French and British soldiers ("Down with the imperialist war and particularly British imperialism"). Lastly let me quote a French general writing in English for the *Weekly Review*.

"The French lost because of almost complete neglect of psychological principles of warfare, based on the experience of several thousand years . . . It was due to the 'democratic' relax of discipline, to the false comradeship between the private and officer, to the neglectful saluting, to the big bellies and too much wine, to the false doctrine that 'we French are warriors, not soldiers,' and that 'one must ask me politely and I am glad to die, but if one command me, I do not' . . ."

Gloucester Gate, N.W.1. RUSSELL V. STEELE.

EMERGENCY BED SERVICE

SIR,—At the outbreak of war the Emergency Bed Service for London was closed, as the whole of the staff were seconded to the Ministry of Health for duties in connexion with the Emergency Hospital Scheme. When the service was re-started an endeavour was made to inform all London doctors of the fact, but owing to the rapid change of personnel which is now going on evidence is accumulating that there are numbers of doctors who are unaware of the facilities offered by the service. We therefore wish to inform any doctors new to London that the service can obtain immediate admission for any urgent or acute case on their behalf if they will ring Metropolitan 8781.

A. M. H. GRAY,
For the committee.
Voluntary Hospitals Emergency Bed Service, London, E.C.2.

THE TIME FOR UNITY

SIR,—It is now clear to even the most conservative among us that the present desperate position of the nation as a whole is due largely to a lack of adequate planning and to the postponement of necessary and overdue reforms in our national economy. Whilst last-minute efforts to remedy these defects may well save the situation, it is abundantly obvious that had the necessary steps been taken years ago we should not have been in our present plight. These remarks apply with added force to the medical services. Medicine even lags behind other industries and professions in its almost complete lack of organisation and state of chaos.

If we must put our house in order to win the war, surely the coming of peace need not be the signal for throwing everything into confusion again. Whatever the outcome of this war, it is clear that it will be followed by a long and difficult period of reconstruction which can only be successful if we maintain the maximum efficiency in every branch of national life. Medicine is most emphatically *not* a luxury. The health services are a prime necessity and are regarded as such in any country which claims to be civilised. It has for many years been clear to all who have devoted their attention to the matter that the provision of a comprehensive national medical service is long overdue. The Socialist Medical Association has prepared a carefully thought-out scheme for this purpose.

Surely the adoption of such a permanent measure for the unification of the health services is preferable to a temporary arrangement designed primarily to save the profession from the threat of bankruptcy.

B. H. KIRMAN.
Socialist Medical Association of Great Britain.

VOLVULUS OF CÆCUM

SIR,—May I add a third, surviving, case of volvulus of the cæcum associated with reversed rotation of the middle gut to the two fatal ones mentioned by Mr. Holman in your issue of July 27.

A woman, aged 65, was admitted to Cardiff Royal Infirmary under the care of Prof. Lambert Rogers on Dec. 22, 1939, with a five-days history of abdominal pain and vomiting. Constipation had been absolute for three days. The general condition on admission was good. There was generalised abdominal distension and borborygmi were audible, but there were no other abnormal physical signs. Laparotomy was performed through a right lower paramedian incision. The condition so well shown in Mr. Holman's thumb-nail sketch was found to be present, with volvulus of the cæcum and ascending colon, which were greatly distended. The volvulus was untwisted and the contents of the cæcum evacuated through a small incision. The gut was viable throughout and the abdomen was closed after anchoring the cæcum back into the right iliac fossa. Convalescence was uneventful.

The three cases suggest that the reversed rotation of the middle gut is of little clinical importance by itself, the patients living a normal healthy existence until volvulus of the cæcum, due to the abnormal mesentery, supervenes.

Cardiff. W. H. GRAHAM JESSOP.

MOTHERS UNDER SIXTEEN

SIR,—I should like to express my appreciation of the interesting article by Dr. Letitia Fairfield in your issue of July 20. There are few more tragic cases in midwifery than these young mothers, but I agree that the problem they raise is not that of difficulty in labour as the confinement is sometimes surprisingly easy. On reflection perhaps this should not cause surprise. Obviously the postponement of maternity in a civilised community is an artificial one. The tissues are less likely to be rigid and unyielding in a very young mother and it is the rigidity of soft parts which causes the prolonged labour of primigravidæ. In addition to easy labours I remember a certain number of almost painless labours in young unmarried primigravidæ. The girl who "accepts the course of events as natural" is likely to have a labour unhindered by muscular spasm.

In some of the cases where the child, a victim of her inexperience, was carried away by a primitive impulse of

the mating instinct, I believe that conception took place without her entire realisation of the significance of what had happened. The soft elastic hymen of the young girl has not attained the rigidity which comes in later years and which, incidentally, is more often due to spasm than to true resistance of the tissues.

In spite of the attractive spontaneity of some of these early matings, precocious maternity is a tragedy. Although the girl of fourteen or fifteen may be physically prepared for child-bearing she is quite unfitted in other respects and our social system is not constructed to make things easier for her. Moreover the character of the children produced, as shown in Dr. Fairfield's series, does not encourage us to favour early maternity. Immaturity in either male or female is an established cause of abortion in animals and one can see the influence of immaturity in Dr. Fairfield's list of malformations and in the high prematurity rate. One might tentatively suggest that this tendency to abortion and premature labour in young mothers of all species may be a natural method of providing an easy first confinement, but if so the result is not worth the price paid for it.

Kensington, W.8. VIOLET RUSSELL.

SULPHONAMIDES IN LUPUS ERYTHEMATOSUS

SIR,—Dr. Propert is hardly justified in the conclusions he draws in your issue of July 6 (p. 5) from observations on a single case.

It does not necessarily follow that because his patient had had tuberculous glands twenty years before the onset of her lupus erythematosus and gave a positive tuberculin test the eruption was of tuberculous origin. I should require much more definite evidence of the absence of chronic streptococcal infection than the statement "no sepsis of teeth or tonsils found."

If the lupus erythematosus were due to latent tuberculosis, why, in the absence of any evidence of agranulocytosis, should the exhibition of sulphanilamide cause "white sloughs" on the tonsils, fauces, palate, and pharynx, and a bacteræmia due to a streptococcus viridans? While admitting that a bacteræmia of this kind is not uncommon as a terminal event I would point out that in this country, as indicated by Roxburgh and others, streptococcal septicæmia is the usual cause of death in lupus erythematosus, and in many cases no trace of tuberculosis has been found post mortem. Surely Dr. Propert's description suggests an acute streptococcal infection, primarily of the upper respiratory tract with subsequent invasion of the blood-stream, pleura and pericardium. To maintain that it was merely an example of drug fever is absurd.

Dr. Propert states that in my opinion "people with lupus erythematosus of tuberculous origin are not hypersensitive to sulphonamides." That is not my opinion, nor have I ever said anything of the kind. Whether a person is tuberculous or not has nothing whatever to do with hypersensitiveness to these drugs as regards either the development of drug fever or the incidence of symptoms such as gastro-intestinal disturbances, ulcers in the mouth, certain forms of eruption, paræsthesiæ of the extremities, neuritis, and so on, to which I specifically referred under the heading of "drug sensitivity." What I did say was that in a few cases, in which I thought tuberculosis was responsible for the lupus erythematosus, the reactions *of the kind I had observed in other cases* did not occur, and I gave reasons for regarding these reactions as distinct from drug-fever and from other symptoms due to drug-sensitivity. I have no doubt that in a series of cases of lupus erythematosus of tuberculous origin a certain percentage would develop drug-fever and other symptoms of intolerance.

The cause of drug-fever occurring during treatment with the sulphonamides is, as far as I am aware, still unknown. We understand from Cramer's work how β-tetrahydronaphthylamine ("T.H.N.") produces fever, by intense stimulation of the adrenals and thyroid glands and thereby of the sympathetic nervous system. This drug evokes a type of fever that is comparable to that of malaria, whereas prolonged thyroid feeding produces one resembling the hectic fever of tuberculosis. But the fundamental mechanism of fever production is probably the same in both septic and aseptic fevers, the essential factor being adrenal-thyroid activity. It seems unlikely that drug-fever during sulphonamide therapy is due directly to the drugs themselves owing to the latent period preceding its onset. It may, as Hageman and Blake suggest, be comparable to that which may occur in serum disease. It must be distinguished from the direct toxic effects of the drugs. I am convinced, however, that febrile reactions following the administration of the sulphonamides are not always examples of drug-fever, and I have adduced good reasons for this view in an article shortly to be published, of which an abstract appeared in your issue of March 30.

Lastly I would emphasise a point that many seem to miss. When an eruption that we recognise as being a cutaneous reaction to a given antigen or toxin is present, it is clear that the antigen or toxin responsible must still be reaching the skin. For example, the presence of nodules in the tuberculous form of erythema induratum is certain evidence of the existence somewhere in the body of an active focus of tuberculosis. The same must be true of active lesions of lupus erythematosus, if and when it is of tuberculous causation. Similarly if and when it is caused by acute or chronic streptococcal or other infection absorption of toxin from the responsible organism must exist.

As already noted, in this country the majority of fatal cases of lupus erythematosus, in which the eruption becomes widespread and acute, apparently die of streptococcal septicæmia, but in other reported cases death has been from general tuberculosis. It is reasonable to suppose that the transition of the usual localised form of the eruption into the acute disseminated type is due to the flooding of the blood-stream with toxin, in the one case tuberculous, in the other streptococcal.

It is clear that, when Dr. Propert's patient developed high fever with general extension of her eruption, she was not suffering from general tuberculosis, for she recovered. Surely it is likely that the febrile reaction and the exacerbation of the eruption were due to septicæmia with the streptococcus that was obtained on blood-culture.

H. W. BARBER.

NURSERY-SCHOOL DIET

SIR,—In your review of Miss Abrahams's pamphlet on nursery-school diet in THE LANCET of July 20 you criticise her recommendation that "brown bread, for instance, should be used as well as white, because of the larger amount of calcium, iron and phosphorus it contains" on the grounds that such statements give an exaggerated idea of the quantities involved and may mislead the layman.

A century ago, when all bread was wholemeal, the average consumption was 21 oz. daily, and the total iron supplied by bread was over 16 mg., of which over 12 mg. was "available." Bread alone thus supplied the full physiological requirements of the body for iron. The average consumption of white bread to-day, 11 oz., supplies only 3 mg. of total iron, of which 2·79 mg. is available; the same amount of wholemeal bread gives 8·5 mg. total iron, of which 6·7 mg. is available; 2·7 mg. represents 22% of the full iron requirements, whereas 6·7 mg. represents 56%.

Orr shows in "Food, Health and Income" that some 22 million persons—about 50% of the population—live on diets whose total iron content is below their requirements. Miss Abrahams's recommendation of wholemeal bread which gives 2½ times the available iron present in white bread, and would supply in the quantities usually eaten over half the daily iron requirement, should therefore be regarded as sound advice and in no way misleading to the layman.

Wholemeal bread supplies 30% more calcium than ordinary white bread but this is admittedly less important, as even the higher figure represents less than a tenth of the day's requirements. The available phosphorus of wholemeal bread is approximately double that of white bread and in the quantities usually eaten would supply almost half the day's requirements, but only a small part of the population is deficient in phosphorus.

The use of wholemeal bread would represent a significant addition in phosphorus, important in poverty diets. Its increased contribution of available iron would be of considerable benefit to about half the population.

MARGARET D. WRIGHT.

Research Laboratories, Vitamins Ltd., July 25.

GUILLOTINE AMPUTATIONS

SIR,—Your leader of Aug. 3 describes the guillotine amputation as a "sinister" and "horrible" operation which "should once and for all be abandoned." In the *Guy's Hospital Gazette* for July 13, Mr. Ogilvie is even more heated, and says that "the guillotine amputation is a crime which no conceivable surgical or military experience can justify." It is true that if a limb is simply chopped off and the patient put to bed and left to the devices of his nurses and orderlies, the results may well be horrible. But supposing that a surgeon excised a tuberculous knee, or corrected a deformity by osteotomy, and failed to apply splints or plaster or to pursue any reasonable after-treatment, the results would be equally horrible. Would you therefore describe all such operations as "sinister," and claim that they should be abandoned? Would you in one stroke abolish every operation of orthopædic surgery? Not at all; you would attack the faulty after-treatment. And I suggest that on the question of guillotine amputations you should attack the faulty after-treatment. The operation is a most valuable addition to the surgeon's repertoire, particularly for amputations where the available skin is limited. Complete success demands, however, that three conditions shall be observed. (1) The amputation must be at the lowest possible level of the limb, the division of bone being in a plane slightly above rather than slightly below that of soft tissues. (2) Skin traction to a Thomas splint, or to weights over the foot of the bed, must be applied at once and not after several days or weeks. (3) The vaseline gauze "no-dressings" technique should be employed.

The objections which you have enumerated are based upon the experiences of 1914–18, and they overlook the great advances in the treatment of infected granulating wounds which have been made since that time. Over ten years' experience of the Winnett Orr technique (or as it is now becoming fashionable to call it, the Trueta technique) has taught us that whether a wound is an infected fracture, an infected joint, an infected burn, or an infected amputation stump, it is the repeated dressing of it which causes pain, shock, loss of body fluids, and secondary hæmorrhage. If the wound is not dressed, irrigated and cleaned with antiseptics, these complications do not arise. The great merit of the guillotine amputation is that it need not be dressed. There are no pockets, no undermined flaps, and no exposed fascial planes. For a week or two at a time the vaseline-gauze dressing remains undisturbed. Treatment becomes exactly comparable with the modern occlusive ("closed plaster") treatment of infected fractures, and the results are no less dramatic, both from the point of view of rapidity of healing and complete freedom from pain, shock, fluid loss and secondary hæmorrhage.

The other basis of your criticism is equally unjust. You suggest that the stump is inevitably "too short for use," whereas in fact the very greatest advantage of the guillotine amputation which has been properly treated by immediate skin traction is that a greater length of stump can be preserved than by any other operation. As a rule the guillotine is not intended to be the final amputation, and it is performed well below the site of election. After a few weeks of continuous skin traction, immobilisation, elevation of the stump, and freedom from repeated dressing, the granulating wound is clean and healthy. Reamputation is deferred until recurrent œdema has finally subsided, thus proving quiescence of the infection. The wound then heals by first intention, and since the amputation has been carried out in a healthy patient, at the surgeon's leisure and at the site of election, the stump is infinitely better than the scarred, puckered product of second-intention healing in a hastily performed infected flap amputation.

In other cases there may be no more than three or four inches of viable skin below the knee-joint. To cut flaps two or three inches long would leave one inch of bone, and a below-knee amputation would be impossible. On the other hand by a guillotine the whole three or four inches can be preserved. Immediate and continued skin traction is employed, the granulating wound gradually shrinks and is covered with epithelium. Without any reamputation at all the stump may be a very good one, for it has the ideal conical shape, and its terminal scar lies in the one and only situation where it will never rub against the bucket. Many men are now walking perfectly with sound below-knee stumps who, if there had been no alternative to the flap or cuff amputation, would necessarily have suffered above-knee amputation with all its disadvantages.

Traumatic and orthopædic surgery has made such great advances that amputation has become a rare operation. In the exceptional case of uncontrollable infection where amputation is inevitable the patient is often desperately ill, and I submit that under these circumstances a guillotine amputation, properly performed at the correct level, and with correct after-treatment, may be the treatment of choice.

Liverpool. R. WATSON-JONES.

HORMONE TREATMENT OF WOUND SHOCK

SIR,—The article of Dr. Selye and Miss Dosne in your issue of July 20 raises an interesting point. They rightly urge the importance of immediate treatment of cases of severe shock with corticosterone. They emphasise in this paper the superiority of corticosterone over desoxycorticosterone, but this question will be decided in the future. We must bear in mind that the best way of dealing with wounds and burn shock would be by increasing the production of endogenous cortico-adrenal hormone by corticotrophic hormone of the pituitary anterior lobe. Our knowledge of the physiology of the anterior lobe of the pituitary points to there being some risk that treatment with adrenal cortical hormone alone would decrease the production of endogenous hormone in the adrenal cortex and hence diminish the power of the body to deal with the infected wound.

In the light of some work I published in 1937 on the reaction of the reticuloendothelial system to the injection of corticotrophic hormone, and some experiments that are now being conducted at the Burden Institute, it would appear that the emergency use of corticosterone should be combined with and followed by a course of corticotrophic hormone in order to ensure the maintenance of high resistance.

Burden Neurological Institute, Bristol. MAX REISS.

POURBOIRE FOR A REPORT

SIR,—I have recently been asked by the medical officer of a neighbouring aerodrome to give him my written opinion on two members of the R.A.F. who were sent to my outpatient department for that purpose. This I was glad to do without any thought of a fee. You may imagine my astonishment when the secretary of the hospital concerned informed me that I was to be paid the sum of 6*d.* in each case by a grateful country. I think in view of the rise in prices at the local chain-store the sum should have been at least 7*d.*

Exeter. ROBERT WORTHINGTON.

THE LATE DR. W. R. MURRAY

SIR,—In your obituary notice of Dr. W. R. Murray there is no mention of the hobby which engrossed the latter years of his life. I refer to the collection and dating of ancient horseshoes, a subject on which he wrote pioneer papers. I feel sure that he would have wished this to be mentioned. Not long before he died he dispatched his collection to the safe shelter of museums, where it will, I hope, perpetuate his name.

Sevenoaks. GORDON WARD.

DAFFODIL AND ORANGE

SIR,—I am indebted to Sir Walter Langdon-Brown for informing me that the first meeting of the Association of Physicians was held in London in 1907, not 1903. My guess was due to inability to get hold of the *Quarterly Journal*, and as we grow old we perish from above, especially in these days. Nevertheless it is important, even in little matters, to be accurate, and I am grateful to him. F. JOHN POYNTON.

PREVENTION OF ADHESIONS

SIR,—May I suggest that every operation area should be treated for one week with diathermy where adhesions and subsequent cicatrisation would be a danger. I have found it extremely useful in Dupuyten's contraction, before and after operation.

Melbourne. W. KENT HUGHES.

Obituary

ERIC PEARCE GOULD

D.M., M.CH. OXFD, F.R.C.S.

SURGEON REAR-ADMIRAL, R.N. (TEMP.)

Mr. Pearce Gould, surgeon to Middlesex Hospital and formerly dean of the medical school, died on Aug. 1 at the Royal Naval Hospital, Plymouth. For some time he had been consulting surgeon to the Navy and early this year he was called up for service at Plymouth with the temporary rank of surgeon rear-admiral. While so engaged he was struck down by the perforation of a duodenal ulcer which after a long illness proved fatal despite the assiduous care of his surgical colleagues.

Lafayette.

Eric Lush Pearce Gould was the second of the three sons of Sir Alfred Pearce Gould. His younger brother Alfred Leslie met his death towards the end of the last war in which he also was attached to the Navy as surgeon. Eric was nurtured in an atmosphere of Victorian strictness which left him with a firm belief in the Baptist faith and an active member of that community. From his early training he was convinced that total abstention from alcohol was right, and throughout his life he was true to that conviction. From childhood he was dogged with severe asthma; very few, even his closest friends, had any conception of the fortitude with which he bore his load. A lesser man would have allowed it to mar his time at Charterhouse, at Christ Church, Oxford, or later his whole life. But he carried through to the full the round of a busy and successful surgeon to a teaching hospital. He created and maintained many facets to such a career. As a teacher he possessed natural gifts which enabled him to convey his own keenness. His admonitory finger became a by-word and a character sketch of him by Mr. Barrington in the hospital journal bears the legend "Gentlemen, I cannot lay sufficient emphasis upon the importance which my colleagues and I attach to this point." In fact his teaching was a pleasure to himself and an absorbing interest to students and nurses. Many of his house-men built their lives on surer foundations owing to their association with him. "We asked his advice," writes a junior colleague, "as a matter of course on all sorts of subjects because he always clarified the situation and pointed a clear solution. I think we used him too much—we may well have drained his vitality." He was dean of the medical school for the four years 1925–29; a busy and strenuous period. The hospital was being rebuilt; Mr. Courtauld made possible the building of the Institute of Biochemistry; the present students' restaurant was initiated. He was an enthusiastic and popular dean who never spared himself in the interests of the hospital or school. In fact his keen interest in all sides of the students' lives never ceased. Many generations of students will remember with gratitude his work on their behalf as hon. treasurer of the Amalgamated Clubs.

He had great facilities of speech and writing. His ability to speak from platform or lecture room was well known and his clarity and forceful exposition led to frequent demands on his time. He excelled as an after-dinner speaker; his brevity and wit delighting all who heard him. He was a voracious reader, especially interested in biographies, because character, both historical and that of his fellow men and women, made strong appeal to him. A personal characteristic was his devotion to his wife and his affection for all his family. Dominating all was the strength of his convictions and the unflinching way in which he carried them into practice. It would not be true to say that he was indifferent to criticism; he was certainly fearless and criticism could not cause him to leave the path he believed to be right. Unlike many men of such strength of character he did not arouse the antagonism of his colleagues; they respected and admired him while his accessibility in spite of the busy life he led endeared him to patients and friends.

As a craftsman, writes G. G.-T., Eric Pearce Gould had courage in abundance, but his well-balanced mind did not permit him to burden himself with the anxieties of the heroic, or with the thrills and disappointments of adventure. His period of greatest surgical activity corresponded with those years when various methods of radiation therapy were being explored, and his enthusiasm for the modern and his ardent desire to do the best for his patient prompted a generous attitude towards his radio-therapeutic colleagues; the more mutilating operations of cancer surgery were less frequently seen in his wards. He realised the value of surgical travel and readily made use of what he saw in other clinics, nor did he scorn to avail himself of the advice and coöperation of his juniors, when this was to the advantage of his patient. He wasted no time over his operations, and his patients did not grow much older during their performance. His surgical interests were catholic in their scope; he derived great satisfaction in the cure of a congenital hypertrophic stenosis of the pylorus, and he did not despise the mundane hernia, for the cure of which he displayed perhaps an extravagant predilection for fascial transplants. Before the last war he introduced the principles and practice of anoci-association, a technique which has been followed by many of his colleagues to this day.

The council of the Medical Defence Union showed their confidence in Pearce Gould when they chose him in 1933 to be their president. Every member of the council knew that he would look at all sides of a question before making up his mind about it, and would give due weight to divergent views. When he did express his own conclusions they were informed by so much wisdom that it was seldom he was outvoted. No trouble was too great for him to take on behalf of the union, many of whom have more reason than they know to thank Pearce Gould for the solution of professioual problems and worries.

Mr. Pearce Gould was in his 55th year. In 1916 he married Audrey Mitchell, daughter of Lawrence Jackson, K.C., who survives him.

THOMAS JAMES STEVEN

M.D. GLASG.; LIEUTENANT, R.A.M.C.

Thomas James Steven was educated at Glasgow High School which he left during the last war to join the Cameron Highlanders as a private. Later he received a commission as second lieutenant in that regiment and served with it throughout the war. After the armistice he took up medicine and qualified M.B. from the University of Glasgow in 1925. In 1926 he became resident at the Bradford Children's Hospital and in 1927 assistant medical officer at Kensington Infirmary. In 1928 he began private practice at Stow and three years later he took his M.D. degree. In 1932 he came to Pinner. On the outbreak of war he volunteered immediately and was attached to the 8th Field Ambulance, on service in France. Later he was transferred to the Berkshire Regiment as medical officer and was killed in action at La Painne. He leaves a widow.

Navana

A colleague writes: Those whom Dr. Steven treated appreciated him as much for his human kindliness as his professional skill and he will be greatly missed both by his patients and his colleagues in the district.

DOUGLAS GRANT WALKER

M.B. EDIN.; PROBATIONARY TEMP. SURG. LIEUT. R.N.V.R.

Douglas Grant Walker, the son of Dr. J. D. Walker of Falkirk, was killed in action aboard H.M.S. *Wakeful* at Dunkirk on May 29. He was born at Glasgow in 1917 and educated at Edinburgh Academy and the University of Edinburgh. He graduated M.B. in July of last year and after a few months' experience as a locum and assistant he joined the R.N.V.R. in February. He was appointed to H.M.S. *Wakeful* in April. A fellow student who had been with Walker at the Coombe Hospital at Dublin and at the Chalmers Street Hostel in Edinburgh writes: During the summer nights of 1939 when studying for our final examinations Walker and I used to work in each other's rooms in an endeavour to keep one another awake, and I came to appreciate how quickly he could pick up knowledge and retain it. He was outspoken but never unkind. He had a fine sense of humour which allowed him to enjoy a tale or joke against himself, and in the words of his friends he was "a good chap."

Dr. RICHARD HAMBURGER, who died in London on July 31, was formerly physician to the Children's Hospital of the University of Berlin where he was also lecturer and professor extraordinary in the diseases of children. He qualified L.R.C.P.E. in this country in 1934 and when he died held the posts of assistant physician with charge of outpatients to the children's department of the London Jewish Hospital, and medical superintendent of the Child Guidance Clinic at Friends House.

Medical News

University of Cambridge

On Aug. 3 the following degrees were conferred:—

M.D.—*H. T. Cox, *J. F. Goodall, N. G. Hulbert, E. T. O. Slater, and C. L. Stote.

M.B., B.Chir.—*G. A. Ballance, *J. M. Pullan, *J. H. Humphrey, *S. R. Reynolds, *C. H. C. Upjohn, *R. G. Benians, *Robert Crawford, *G. J. Laws, *David Scott, *J. F. Smith, P. E. Percival, *M. H. K. Haggie, *H. H. Wolff, *J. C. K. Campbell, *J. H. Keesey, *J. R. Tasker, *P. D. T. Roper, R. L. Canney, Philip Haden, *R. C. Jack, *J. F. Paxton, *W. R. B. Dickinson, *T. S. S. Gregory, *R. R. Hunter, *T. E. Jones-Davies, *J. A. N. Lock, *J. M. Marchant, *R. S. Monro, *H. V. Morgan, *A. G. Porter, *R. A. Shooter, *G. T. G. Thomas, *G. K. F. Cohen, R. McL. Todd, *B. N. Brooke, E. E. Jones, *L. J. Bendit, *A. G. G. Long, *G. E. Spear, *H. J. Anderson, *P. J. Crowley, *T. A. Kemp, *W. L. Price, *R. C. Howard, L. B. G. Bennett, B. F. H. Parker-Wood, *J. A. Campbell, *R. V. Dent, *B. C. H. Luker, *A. D. Payne, Neville Southwell, *G. S. Gladstone, *M. W. W. Wood, *L. R. S. Taylor, *H. T. Calvert, *R. T. Hastings-James, *L. W. Smith, A. J. Moss-Blundell, *G. E. Stein, *Rubin Friedman, and *Henry Rabinowitz.

* By proxy.

Royal College of Surgeons

The Bernhard Baron research laboratories of the college were closed at the beginning of the war so that the services of the scientific and technical staff should be available for the establishment of the Army Blood Transfusion Service. The work of this organisation is now functioning satisfactorily, and it has been decided to reopen the laboratories to carry out research on problems which have arisen since the war began.

Royal College of Obstetricians and Gynæcologists

At a meeting of the council held on July 27 Prof. W. Fletcher Shaw was re-elected president. The following officers were also elected: vice-president, Mr. Eardley Holland and Prof. C. G. Lowry; hon. treasurer, Mr. J. P. Hedley; hon. librarian, Mr. F. W. Roques; hon. curator of museum, Mr. A. W. Bourne; and hon. secretary, Mr. G. F. Gibberd.

The following were admitted by the president:—

Fellowship.—G. F. Gibberd, London; *S. L. Navaratnam, Ceylon; *Manindranath Sarkar, Calcutta, India; and Dagmar F. C. Wilson, Oxford.

* In absentia.

Membership.—Nora L. Keevil and R. C. Percival.

The following were elected to the membership:—

A. F. Anderson, J. O. E. Apthorp, W. T. Dingle, M. P. Embrey, D. B. Fraser, Archie Herstein, A. B. Higginson, G. S. Lester, S. W. Liggett, Robin Murdoch, S. M. Nawab, F. J. P. O'Gorman, Coralie W. Rendle-Short, I. E. J. Thomas, L. O. Watt, and Stanley Way.

Royal College of Surgeons of Edinburgh

At a meeting of the college held recently with Dr. H. M. Traquair, the president, in the chair, the following were admitted to the fellowship:—

R. D. H. Bagrie, M.B. Edin.; J. N. Barron, M.B. N.Z.; G. A. Craig, M.B. Belf.; A. E. Flax, M.B. Cape Town; A. L. Gilbey, M.B. Edin.; E. W. Grahame, M.B. Glasg.; B. L. Harbison, M.B. Sydney; R. A. Jamieson, M.B. Edin.; G. E. Langley, M.D. Manitoba; S. V. W. Leary, M.B. Witwatersrand; C. W. Maclay, M.B. Glasg.; G. F. Pennal, M.D. Toronto; L. V. Phatak, M.B. Bombay; H. W. Porter, M.B. Edin.; D. C. Racker, M.B. Manc.; I. M. Robertson, M.B. Lond.; R. J. Rutherford, M.B. Durh.; K. C. Sarbadhikari, M.B. Calcutta; A. H. Thomson, M.R.C.S. J. A. Weir, M.B. Glasg.; and G. S. M. Wilson, M.B. Edin.

Scottish Conjoint Board

The following have passed the final examination and have been admitted licentiates of the Royal Colleges of Physicians and Surgeons of Edinburgh and the Royal Faculty of Physicians and Surgeons of Glasgow:—

S. P. Abraham, Irving Abramson, Alam Baboolal, Arthur Beck, A. R. Bleich, A. C. Buchan, M. F. J. Clarke, T. M. Cole, W. C. Crawford, Jerome Duckman, H. A. Finkelstein, Jacob Frankenthal, R. L. Friedman, Herman Gikow, Arthur Greenberg, Maxwell Harrison, S. A. Heiligman, Daniel Hirschl, F. G. Hunter, Bernard Iskowitz, E. M. Israels, Abraham Jacobs, George Kanner, Sanford Katz, W. H. L. La Frenais, W. K. Laing, W. E. Lawes, Thomas Lawrie, V. L. Lucas, J. N. W. McCagie, F. W. Mahoney, I. H. Mauss, A. H. El Menoufy, Jason Miller, C. M. Newman, Sidney Olansky, Robert Ormiston, John O'Rorke, A. P. Osher, S. H. Pomerantz, B. S. Post, J. K. Pugh, A. J. Raphael, Natanas Reifavicius, C. R. Roberts, H. L. Rolbin, Samuel Rosner, Leon Salzman, H. L. Schrier, Henry Shankman, E. A. Shanu, Isidore Siegel, Samuel Silverman, W. H. Skinner, M. H. Slatkin, J. I. Sneider, Morris Spielberg, Morris Tanenbaum, Pasupathy Thambipillai, N. St. G. Wade, E. A. Wallis, H. N. Wender, M. I. Wishner, and Sidney Zeichner.

The following graduates of recognised foreign universities have also been admitted licentiates:—

Kasper Blond, K. K. Kcamaris, Sylvia Lerer, T. J. Peristiany, Rene Salm, and Emanuel Seidenman.

Medical Casualties

The following casualties have been announced:—

Missing.—Temp. Surgeon Lieutenant D. H. T. Duggan, H.M.S. *Ardent*; Prob. Temp. Surgeon Lieutenant H. J. Stammers, H.M.S. *Acasta*.

Wounded.—Temp. Surgeon Lieutenant D. L. P. De Courcy, H.M.S. *Wren*; Temp. Surgeon Lieutenant J. F. Buchan, H.M.S. *Borcas*.

Major-General G. A. D. Harvey, L.R.C.P.I., who has been missing since May 23, is now reported to be a prisoner of war.

Home-produced Food in Scotland

Sir John Orr, F.R.S., speaking in Edinburgh at a conference on the utilisation of home-produced food, stressed the value of potatoes, other vegetables, oatmeal, and milk in the national economy. All were foods which could be produced in abundance in this country. It might well be, he said, that food would be the decisive factor in this war as it was in the last. In peace-time we imported about two-thirds of our food, using 20 million tons of shipping and paying for it by the export of industrial products and foreign credits. We must accustom ourselves to eat more home-produced foodstuffs. Before the war wealthy people consumed far more milk and vegetables than the poor. The desirable daily quantities for everyone were two-thirds of a pint of milk and 6 oz. of vegetables. There must be no deterioration in nutrition during the war; instead the national diet must be levelled even during these difficult times. The first step had already been taken by the Government in the introduction of the cheap and free milk scheme for families with children. To bring up the consumption of vegetables we would have to grow far more than we grew in peace-time and the most important part in the campaign was the allotment and garden scheme. If he were dictator he would make it a penal offence for any family not to produce something if only what could be grown in a flower-pot. With allotments and well-stocked gardens all over the country we should have food produced near the homes of the consumers, save transport, and ensure that food was available no matter what happened. More vegetables must be eaten during the period of plenty in the summer and autumn, and planting should be arranged so that there was a continuous supply throughout the winter months. Vegetables could be preserved and several different methods of drying were described. Sir John said that if we made full use of our home-produced foods there was no reason why the Scots should not finish at the end of the war better fed than they were before.

Notes, Comments and Abstracts

MANY AT A BIRTH

From a monograph on human multiple pregnancy, shortly appearing in America, by ALAN F. GUTTMACHER, M.D., *associate professor, department of obstetrics, Johns Hopkins University.*

WHAT is the maximum number of children which woman may achieve at a single birth? Textbooks of long ago report instances of hyperfecundity which are as remarkable as they are incredible. The most extravagant claim, made on behalf of the haughty Countess of Hagenau, Mauriceau records in his textbook of 1668:

"But I esteem it either a Miracle, or a Fable, what is related in the History of the Lady Margaret Countess of Holland, who in the year 1313 was brought to bed of 365 children at one and the same time; which happened to her, as they say, by a poor Woman's Imprecation, who asking an alms related to her the great misery she was in by reason of those children she had with her; to which the Lady answered, she might be content with the inconvenience, since she had had the pleasure of getting them."

Recent critics presume that her ladyship bore a hydatid mole and that her physician counted each vesicle an offspring until he reached 365, one for each day in the year. A century earlier, Ambroise Paré, himself a curious blend of science, piety and superstition, reprinted Mirandula's report of one Dorothy, who "had twenty children at two births, at the first nine and at the second eleven."

These accounts are patently apocryphal, but as we journey from obvious fancy to undisputed fact we come upon a borderland of uncertain truth. There is, for example, the claim of seven fœtuses in a single human litter, the septuplets from Hameln, a town more famous for the Pied Piper. The sole record of their birth is a tablet erected in its commemoration on the house where it is supposed to have occurred. The inscription reads:

"Here on this spot dwelt the well-known citizen, Thiele Romer, and his helpmate Anny Beyers. It came about that in the year 1600, as man reckons time, at 5 o'clock in the morning on the ninth day of January, she was delivered of two small boys and five small girls. They received the holy rites of baptism and all peacefully died by twelve o'clock on the twentieth of January. God will grant them eternal bliss which is ever prepared for all those who believe."

Several authentic cases of sextuplets have been reported; one in South Africa in 1903 was investigated by two English medical officers. Their report contains a photograph of the children, all of whom survived forty-eight hours. However, the six succumbed by the fourth day. There were five boys and one girl, with four placentas. A case published by Vassali in 1888 is equally well established. The total weight of the six fœtuses, four boys and two girls, delivered on the 115th day, was 1730 grammes. There was one fused placenta. The birth of the Dionne quintuplets in May, 1934, has stimulated great interest in multiple births of this particular magnitude. McArthur and Ford have summarised in tabular form forty-five cases from the literature (1694–1936). Thirty-four were published in the last hundred years and eleven during the previous century and a half. This in no way signifies that quintuplets are becoming increasingly common; merely that a great proportion are being reported. The most recent case was published in the *British Medical Journal*; delivery of five female fœtuses occurred during the sixth month of pregnancy. They all weighed 930 g., and were apparently derived from a single egg. The Dionne quintuplets, thanks largely to the skilful, commonsense care of Dr. Dafoe, have shattered all records for group and individual survival. Previously no single quintuplet had survived beyond fifty days, and no entire quintet for more than fourteen days. According to the physical and mental studies caried out by the Toronto group under Blatz, the five little girls of Callender were derived from one egg.

When analysing documents which report marvellous fecundity it is well to maintain a brave scepticism, or you will find yourself the unwitting supporter of a medical hoax. Even the acknowledged dignity and veracity of the place of publication does not make the recorded event necessarily authentic. The *Boston Medical and Surgical Journal* of Sept. 26, 1872, published the following:

"Eight Children at a Birth. On the 21st of August Mrs. Timothy Bradlee, of Trumbull County, Ohio, gave birth to eight children—three girls and five boys. Mr. Bradlee was married six years ago to Eunice Mowery, who weighed 273 pounds on the day of their marriage. She has given birth to two pairs of twins, and now eight more, making twelve children in six years. Mrs. Bradlee was a triplet, her mother and father being twins, and grandmother the mother of five pairs of twins."

This case gained widespread notice and credence, being quoted in several medical journals and books. In 1915, G. H. Parker, the Harvard biologist, became suspicious and by clever sleuthing unearthed the following facts. Some practical joker, probably a rejected suitor of the calumniated Eunice Mowery, had stolen into the county paper's office in the dead of night. He removed a block of type from the first page, which had already been set up, inserted the above article, struck off a few copies and sent them to the New York dailies. In order to prevent local suspicion, he restored the page to its original state. The New York dailies printed the article, which was republished in the *Boston Medical and Surgical Journal*, and in this way a purely fictitious story became an accredited medical event.

ERGOT MORE PLENTIFUL

FEAR of a famine in ergot has now been removed as a result of the shipment to this country from a Portuguese port of parcels of the drug produced this season in Spain and Portugal. If all goes well there will be further arrivals from the same sources, for it is understood that orders for substantial quantities have been placed by London merchants which are expected to be received from time to time during the next six weeks. As a consequence of the relief of the scarcity of ergot there has been a remarkable fall in the prices quoted on the London drug market: quotations for wholesale quantities as between importers and dealers have dropped suddenly from 23*s.* per lb., which was the price quoted for the remnants of the old stocks to 10*s.* per lb. (for newly produced material). The likelihood of a downward movement in values was foreseen, but few can have expected such a sudden collapse in price as this. In due course the reduced cost of the raw material will no doubt be reflected in lower prices for the preparations of ergot, but that is not sufficient reason to disregard the hint recently given by the Medical Research Council to exercise economy in their prescription.

THE EVACUEE

If you can keep your maid when all about you
  Are losing theirs and blaming it on Them;
If you can make Them trust you though They flout you
  And shatter your accustomed inward phlegm;
If you can change wet beds and yet be cheerful,
  And not forget to treat the psyche too;
If you don't think evacuees are fearful
  You'll sympathise with Mrs. Strachey's view.

Many people who thought that they were taking wee sleekit cow'rin' tim'rous beasties into their houses last September later found that for ways that are dark and tricks that are vain the evacuee is peculiar, which Mrs. St. Leo Strachey would like to explain (Borrowed Children. John Murray. 1*s.* 6*d.*). Her own view is marked by notable sympathy and insight. The borrowed children have on the whole behaved well in difficult circumstances, and anyone who comes across them would be wise to read her lively little book. The first part is good reporting—an account of the arrival and early impressions of the children. Then follows an unsystematic account of evacuation and the only child, cliques, fear in bad billets and anxiety for parents left in "dangerous areas," jealousy of and responsibility for a younger brother or sister, re-billeting, occupational therapy, hostels, and so on. The case-histories are well selected and really helpful. In the episodic drama which is unfolded the Prince of Darkness (enuresis) is repeatedly defeated by the Powers of Light (child-guidance clinics). Mrs. Strachey next considers systematically what has been and should be done for the

emotional difficulties of these children, and concludes with an appendix containing précis of various reports on evacuation.

NEW PREPARATIONS

BROMETHOL (Burroughs Wellcome and Co., London) have now made available a 66⅔% solution of tribromethyl alcohol in amylene hydrate.

HEXŒSTROL (Burroughs Wellcome and Co.) are supplying 4 : 4′-dihydroxy-γ-δ-diphenyl-η-hexane in tabloids under this name which they manufacture. This synthetic œstrogen is closely related to diethylstilbœstrol. It is also supplied as Hypoloid Hexœstrol for intramuscular injection.

METHEDRINE (Burroughs Wellcome and Co.) have added to their range of tabloid products Methedrine Hydrochloride, a synthetic substance belonging to the sympathomimetic amine group. It is stated to produce a prolonged rise of blood-pressure and stimulation of the central nervous system, especially of the cerebral cortex. Suggested indications for its use are in the treatment of narcolepsy, as an analeptic in barbiturate poisoning and as an antispasmodic in the X-ray visualisation of the gastro-intestinal tract.

ISOFLAV.—Under this name Boots Pure Drug Co., Ltd. (Nottingham) present solution tablets of proflavine sulphate for the prevention and control of wound infection. One tablet dissolved in 4 fl. oz. of distilled water makes a 1 : 1000 isotonic buffered solution at approximately pH 6·3. The tablets are supplied in bottles of 50.

CORVOTONE is the name adopted by Boots Pure Drug Co., Ltd. for their 25% solution of pyridine-β-carboxylic acid diethylamide (also known as nikethamide). It is supplied for use as a cardiac and respiratory stimulant, in vials containing ½ oz. or 100 c.cm., and in ampoules of 2 c.cm. or 5 c.cm.

MORYL.—Under this name Savory and Moore Ltd. are now manufacturing carbaminoylcholine chloride.

A COMBINED VACCINE.—Antityphoid-paratyphoid Vaccine and Tetanus Toxoid (combined) (T.A.B.T.) is a combination of prophylactic antigens intended for simultaneous immunisation against typhoid and paratyphoid fevers and tetanus, by two injections. The usual doses of tetanus toxoid are incorporated with the first and second doses of antityphoid-paratyphoid vaccine (T.A.B.) and the two doses are given with an interval of at least one month between. It is issued in sets of two doses for one patient and also in 10 c.cm. rubber-capped bottles of the first-dose strength and 10 c.cm. rubber-capped bottles of the second-dose strength. It is prepared in the inoculation department of St. Mary's Hospital, London, and distributed by Parke, Davis and Co., London, W.1.

HONOURS IN THE SERVICES

THE military cross has been awarded to Captain (now Major) William Morgan Evans, R.A.M.C., T.A., and Captain Michael Joseph Kohane, R.A.M.C.

Major Evans was in command of a company of a field ambulance which was detailed to open an advanced dressing station on the Ankenes Peninsula. This served British, French, and Polish troops, all of whom speak highly of the meritorious work done by him in the organisation and evacuation of the wounded. He carried on under frequent aerial bombardments, during one of which he successfully evacuated a wrecked French dressing station.

Captain Kohane was attached to a brigade headquarters and had established a central aid post at Tretton. In spite of continuous shelling of this small village he returned many times to evacuate the wounded, and was not content until he had also removed all dressings and medical stores to safety. By this prompt action many wounded were saved from burning.

MOBILE UNITS AGAIN

IN our issue of July 20 we gave an account of the equipment of mobile units now in use by the A.R.P. services throughout the country. We may remind our readers that equipment of the type described is not a new idea, but was devised in the last war by Mr. E. M. Cowell. A full description appeared in the *Journal* of the R.A.M.C. of June 1917, and is substantially reproduced in the appendix to "Medical Organisation and Surgical Practice in Air Raids" (Mitchener and Cowell. London, 1939).

INFECTIOUS DISEASE IN ENGLAND AND WALES

DURING THE WEEK ENDED JULY 20, 1940

Notifications.—The following cases of infectious disease were notified during the week: smallpox, 0; scarlet fever, 1343; whooping-cough, 878; diphtheria, 818; enteric fever, 65; measles (excluding rubella), 9892; pneumonia (primary or influenzal), 434; puerperal pyrexia, 168; cerebrospinal fever, 177; poliomyelitis, 18; polio-encephalitis, 5; encephalitis lethargica, 3; dysentery, 87 (53 at Wellington, Salop); ophthalmia neonatorum, 113. No case of cholera, plague, or typhus fever was notified during the week.

The number of civilian and service sick in the Infectious Hospitals of the London County Council on July 19 was 645, made up of: scarlet fever, 90; diphtheria, 127; measles, 16; whooping-cough, 19; enteritis, 49; chicken-pox, 29; erysipelas, 34; mumps, 36; poliomyelitis, 1; dysentery, 2; cerebrospinal fever, 28; puerperal sepsis, 32; enteric fevers, 53; german measles, 2; other diseases (non-infectious), 48; not yet diagnosed, 75.

Deaths.—In 126 great towns, including London, there was no death from smallpox, enteric fever, or scarlet fever, 3 (1) from whooping-cough, 5 (0) from measles, 23 (2) from diphtheria, 23 (5) from diarrhœa and enteritis under 2 years, and 6 (1) from influenza. The figures in parentheses are those for London itself.

There were 4 deaths from diarrhœa at Birmingham. Plymouth reported 4 fatal cases of diphtheria.

The number of stillbirths notified during the week was 224 (corresponding to a rate of 40 per thousand total births), including 31 in London.

Appointments

DENNISON, F. R., M.D. Lond., D.P.H., deputy M.O. for Leeds.

FREESE, ARTHUR, M.R.C.S., L.D.S., casualty officer and fracture H.S. at the Chesterfield and North Derbyshire Royal Hospital.

JACOMB, EDWARD, L.M.S.S.A., barrister at law, temporary assistant M.O. at Runwell Hospital, Essex.

JOSCELYNE, MURIEL V., M.B. Bris., D.P.H., assistant school M.O. for Cornwall.

LANGLEY, G. E., F.R.C.S.E., R.M.O. at King Edward Memorial Hospital, London.

MCNEILL, LILIAN E., M.B. St. And., R.M.O. at Canwell Hall Babies' Hospital, Birmingham.

PARKER, GILBERT, M.B. Aberd., F.R.C.S.E., R.S.O. at Hemlington Emergency Hospital, Middlesbrough.

QUAYLE, GEORGE, M.R.C.S., resident assistant M.O. (anæsthetist) at the North Middlesex Hospital, Edmonton.

ROBERTS, ARWYN, M.B. Edin., temporary assistant M.O. at Runwell Hospital, Essex.

SIMPSON, JOHN, M.B. Durh., demonstrator in pathology at King's College, Newcastle-on-Tyne.

SNELLING, MARGARET D., M.B. Lond., assistant in the radiotherapy dept., Middlesex Hospital.

STEWART, A. B., M.D. St. And., D.P.H., deputy M.O.H. and tuberculosis officer for Finsbury.

Examining surgeons under the Factories Act 1937: Dr. W. B. Loreless (Ramsgate, Kent); and Dr. D. Stanley-Jones (Breage, Cornwall).

Births, Marriages and Deaths

BIRTHS

HINDS HOWELL.—On Aug. 1, at Farnham, the wife of Major Anthony Hinds Howell, R.A.M.C.—a daughter.

RICHARDS.—On July 21, at Cambridge, the wife of Dr. F. Alan Richards—a son.

MARRIAGES

BLUETT—SIMPSON-SMITH.—On July 25, at Guildford, Douglas Bluett, M.B., Major R.A.M.C., to Johanna Simpson-Smith.

GREIG—VERITY.—On Aug. 3, in Edinburgh, John Craig Rose Greig, M.B., Lieutenant R.A.M.C., to Jean Beatrix Verity.

TOWNSLEY—DICKIE.—On July 31, at Marton, Norman Townsley, F.R.C.S., to Alice Eleanora Dickie, M.D., elder daughter of Mr. W. S. Dickie, F.R.C.S.

TURNER—CONNORS.—On Aug. 1, at Southsea, Leslie Howard Turner, M.R.C.S., to Kathleen Elizabeth Connors.

HOULDING—WELSTEAD.—On July 27, at All Souls', Langham Place, London, R. Neville Houlding, M.B., Flying Officer R.A.F.V.R., to Jean Welstead.

DEATHS

ANDERSON.—On July 26, Alexander Anderson, L.R.C.P.E., Lieut.-Colonel R.A.M.C. (retd.), of Bath.

BIDEN.—On Aug. 1, at Bromley, Kent, Edward James Biden, M.R.C.S., Surgeon Captain R.N. (retd.), aged 81.

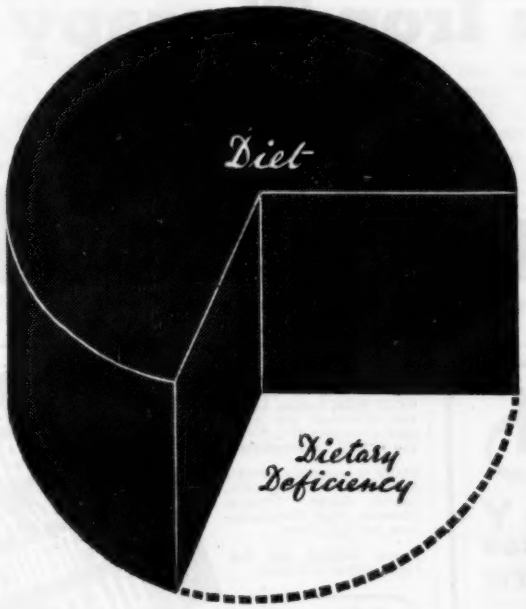
ENGLAND.—On Aug. 2, George Fuller Ashbridge England, M.D. Camb., formerly of Winchester, in his 80th year.

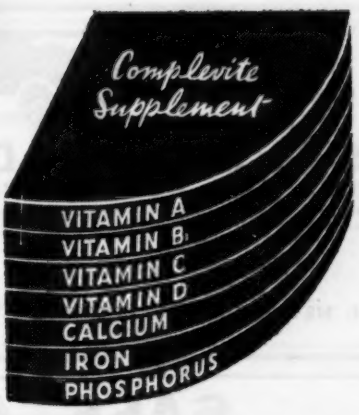
HAMBURGER.—On July 31, in London, Richard Hamburger, L.R.C.P.E.

MALE.—On July 30, at Salisbury, Herbert Christopher Male, M.D. Edin., aged 82.

PEARCE GOULD.—On Aug. 1, at the Royal Naval Hospital, Plymouth, Eric Lush Pearce Gould, D.M., M.Ch. Oxfd, F.R.C.S. Surgeon Rear-Admiral R.N. (Temp.), aged 54.

WARING.—On Aug. 3, at Fishbourne, Chichester, John Arkle Waring, M.B. Oxfd.





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Provisional Programme

WAR SURGERY OF THE EXTREMITIES. August 19th—23rd, 1940

MONDAY, AUGUST 19TH.

10 a.m.	General Principles of War Surgery of Limbs.	Professor G. Grey Turner, LL.D., D.Ch., M.S., F.R.C.S., F.A.C.S., F.R.A.C.S.
11.15 a.m.	Administrative Problems in War Surgery.	Colonel E. M. Cowell, C.B.E., D.S.O., T.D., F.R.C.S.
2 p.m.		Colonel C. Max Page, D.S.O., M.S., F.R.C.S.

TUESDAY, AUGUST 20TH.

10 a.m.	Wounds of the Soft Parts of Limbs and Their Treatment.	
11.15 a.m.	Wounds Complicated by Injury to the Bone.	
12.15 p.m.	Radiological Investigation of Wounds of the Extremities.	Dr. J. Duncan White, M.B., Ch.B., D.M.R.E.
2 p.m.	Demonstration of Specimens, illustrating War Wounds of the Extremities at Royal College of Surgeons.	Dr. John Beattie, D.Sc., M.D.

WEDNESDAY, AUGUST 21ST.

10 a.m.	Wounds of the Joints.	
11.15 a.m.	Complications of Infected Wounds. Sepsis in its various forms.	Professor J. Paterson Ross, M.S., F.R.C.S.
3 p.m.	Tetanus. Its Prevention and Treatment.	Colonel L. B. Cole, M.D., F.R.C.P.
4 p.m.	Gas Gangrene and Anaerobic Infections.	Colonel C. Max Page, D.S.O., M.S., F.R.C.S.

THURSDAY, AUGUST 22ND.

10.15 a.m.	War Burns.	Surg. Rear-Admiral C. P. Wakeley, D.Sc., F.R.C.S., F.A.C.S., F.R.S.
11.15 a.m.	Secondary Hæmorrhage.	Professor G. Grey Turner, LL.D., D.Ch., M.S., F.R.C.S., F.A.C.S., F.R.A.C.S.
2.30 p.m.	Blood Transfusion.	Colonel L. E. H. Whitby, C.V.O., M.C., M.D., F.R.C.P.

FRIDAY, AUGUST 23RD.

10 a.m.	Wounds of the Hands.	Mr. A. K. Henry, M.Ch., F.R.C.S.
11.15 a.m.	Wounds of the Feet.	Mr. A. K. Henry, M.Ch., F.R.C.S.
2 p.m.	Sinuses and Sequestra.	Professor G. Grey Turner, LL.D., D.Ch., M.S., F.R.C.S., F.A.C.S., F.R.A.C.S.
3 p.m.	Traumatic Aneurisms.	Surg. Rear-Admiral G. Gordon-Taylor, O.B.E., M.S., F.R.C.S.

The fee for the Course will be £1 1s., but no fee will be charged in the case of Officers of the Armed Forces who submit a leave certificate and register their names before the commencement of the Course. Applications for tickets should be addressed to the Dean, British Postgraduate Medical School, Ducane Road, W.12.

STATIONS: Wood Lane (Central London Railway), Ladbroke Grove (Metropolitan Railway) and No. 7 (Acton Vale) Bus.
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Vacancies are limited and applications should be made immediately to the Dean, Guy's Hospital Medical School, London Bridge, S.E.1.

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A PRIVATE HOSPITAL for the treatment of mental and nervous illnesses. Conveniently situated and easy of access from all parts. Six acres of ground facing Finsbury Park. Voluntary and Temporary Patients received without certification. Occupational Therapy, Psychotherapy, and other modern forms of treatment. Air-raid Shelters have been provided.

Telephone: Stamford Hill 2688. *Telegrams:* "SUBSIDIARY, LONDON."

Convalescent Home, KEARSNEY COURT, DOVER.

For further particulars apply to the MEDICAL SUPERINTENDENT.

COURT HALL, KENTON, near EXETER

FOR THE TREATMENT OF EIGHT LADIES, VOLUNTARY, TEMPORARY AND CERTIFIED PATIENTS

CLIFFDEN, TEIGNMOUTH

FOR EARLY AND CONVALESCENT CASES Recreational Therapies are held daily by skilled Leaders

The house stands high with spacious balconies and extensive views of the South Devon Coast. Beautiful garden. Own Dairy in 25 acres. Private road to beach. There is also a charming house, **EBWORTHY, MANATON, DARTMOOR,** situated in 20 acres, 1100 ft. up for bracing moorland air.

Resident Physicians—BERTHA M. MULES, M.D., B.S. ANNE S. MULES, M.R.C.S., L.R.C.P.

Telephones—STARCROSS 259 and TEIGNMOUTH 289

HAYDOCK LODGE,

NEWTON-LE-WILLOWS, LANCASHIRE.

For the reception and treatment of PRIVATE PATIENTS of both sexes of the UPPER AND MIDDLE CLASSES suffering from Mental and Nervous Disorders, Alcoholism and Drug addiction, either voluntarily, temporarily, or under certificate. Patients are classified in separate buildings according to their mental condition. Situated in park and grounds of 400 acres. Self-supported by its own farm and gardens in which patients are encouraged to occupy themselves. Every facility for indoor and outdoor recreation. For terms, prospectus, etc., apply MEDICAL SUPERINTENDENT. *'Phone:* Ashton-in-Makerfield 7311. *Tele. Address:* Street, Ashton-in-Makerfield.

THE OLD MANOR SALISBURY

A Private Hospital for the Care and Treatment of those of both sexes suffering from MENTAL DISORDERS.

Extensive grounds. Detached Villas. Chapel. Garden and Dairy Produce from own farm. Terms very moderate.

CONVALESCENT HOME AT BOURNEMOUTH Detached Villas standing in 12 acres of ornamental grounds, with tennis courts, etc., which Voluntary, Temporary or Certified Patients may visit by arrangement for long or short period.

Illustrated Brochure on application to the Medical Superintendent. The Old Manor, Salisbury. Telephone: Salisbury 3216 and 3217.

HOLLOWAY SANATORIUM VIRGINIA WATER

A Registered Hospital for the Treatment of MENTAL DISORDERS of the EDUCATED CLASSES. Founded by THOMAS HOLLOWAY in 1885.

This Institution is situated in a beautiful and healthy locality within easy reach of London. It is fitted with every comfort. Patients can have Private Bedrooms and Special Nurses as well as the use of General Sitting Rooms, at moderate rates of payment. Voluntary Patients can be admitted.

There is a Branch Establishment at CANFORD CLIFFS, BOURNEMOUTH, where Patients can be sent for a change and be provided with all the comforts of a well-appointed home.

For Terms, apply to—

The RESIDENT MEDICAL SUPERINTENDENT, St. Ann's Heath, Virginia Water, SURREY

ST. ANDREW'S HOSPITAL

FOR NERVOUS AND MENTAL DISORDERS,

NORTHAMPTON

FOR THE UPPER AND MIDDLE CLASSES ONLY.

PRESIDENT: THE MOST HON. THE MARQUESS OF EXETER, K.G., C.M.G., A.D.C.

MEDICAL SUPERINTENDENT: THOMAS TENNENT, M.D., M.R.C.P., D.P.H., D.P.M.

This Registered Hospital is situated in 130 acres of park and pleasure grounds. Voluntary patients, who are suffering from incipient mental disorders or who wish to prevent recurrent attacks of mental trouble; temporary patients, and certified patients of both sexes are received for treatment. Careful clinical, bio-chemical, bacteriological, and pathological examinations. Private rooms with special nurses, male or female, in the Hospital or in one of the numerous villas in the grounds of the various branches can be provided.

WANTAGE HOUSE

This is a Reception Hospital in detached grounds with a separate entrance, to which patients can be admitted. It is equipped with all the apparatus for the complete investigation and treatment of Mental and Nervous Disorders by the most modern methods: insulin treatment is available for suitable cases. It contains special departments for hydrotherapy by various methods, including Turkish and Russian baths, the prolonged immersion bath, Vichy Douche, Scotch Douche, Electrical baths, Piombieres treatment, etc. There is an Operating Theatre, a Dental Surgery, an X-Ray Room, an Ultra-violet Apparatus, and a Department for Diathermy and High-frequency treatment. It also contains Laboratories for bio-chemical, bacteriological, and pathological research. Psychotherapeutic treatment is employed when indicated.

MOULTON PARK

Two miles from the Main Hospital there are several branch establishments and villas situated in a park and farm of 650 acres. Milk, meat, fruit, and vegetables are supplied to the Hospital from the farm, gardens, and orchards of Moulton Park. Occupational therapy is a feature of this branch, and patients are given every facility for occupying themselves in farming, gardening, and fruit growing.

BRYN-Y-NEUADD HALL

The seaside house of St. Andrew's Hospital is beautifully situated in a Park of 330 acres, at Llanfairfechan, amidst the finest scenery in North Wales. On the North-West side of the Estate a mile of sea coast forms the boundary. Patients may visit this branch for a short seaside change or for longer periods. The Hospital has its own private bathing house on the seashore. There is trout-fishing in the park.

At all the branches of the Hospital there are cricket grounds, football and hockey grounds, lawn tennis courts (grass and hard courts), croquet grounds, golf courses, and bowling greens. Ladies and gentlemen have their own gardens, and facilities are provided for handicrafts, such as carpentry, etc.

For terms and further particulars apply to the Medical Superintendent (TELEPHONE: No. 2356 and 2357 Northampton), who can be seen in London by appointment.

CHEADLE ROYAL HOSPITAL, Cheadle, Cheshire.

This REGISTERED HOSPITAL, with a SEASIDE BRANCH at Colwyn Bay, N. Wales, is for the treatment and care of those of the Upper and Middle Classes suffering from MENTAL AND NERVOUS DISEASES.

The Hospital is governed by a COMMITTEE, appointed by the TRUSTEES of the Manchester Royal Infirmary.

In addition to the Main Buildings there are separate villas. Extensive grounds. Hard and grass tennis courts, cricket and croquet grounds, and a court for badminton. There are also wireless installations. Golf may be had within easy distance. Occupational Therapy.

VOLUNTARY, TEMPORARY, AND CERTIFIED PATIENTS received.

The Hospital is nine miles from Manchester, 50 minutes by rail from Liverpool, and 3½ hours from London.

For terms and further particulars apply to the Medical Superintendent, who may be seen in Manchester BY APPOINTMENT. *Telephone: Gatley* 2231 (3 lines).

CAMBERWELL HOUSE

Telegrams: "PSYCHOLIA, LONDON." **33, PECKHAM RD., LONDON, S.E.5.** Telephone: Rodney 4242 (2 lines).

For the treatment of MENTAL DISORDERS.

Also completely detached Villas for Mild Cases, with private suites if desired. Voluntary Patients received. Twenty acres of Grounds. Hard and Grass Tennis Courts, Putting Greens, Bowls, Croquet, Squash Rackets, Recreation Hall with Badminton Court, and all indoor amusements, including Wireless and other Concerts, Occupational Therapy, Calisthenics, and Dancing Classes. X-ray and Actino-therapy, Prolonged Immersion Baths, Operating Theatre, Pathological Laboratory, Dental Surgery, and Ophthalmic Department. Chapel. **Shock and also modified Insulin Therapy.**

Senior Physician: Dr. HUBERT JAMES NORMAN, assisted by a resident Medical Staff, and visiting Consultants.

An Illustrated Prospectus, giving fees which are strictly moderate, may be obtained upon application to the Secretary.

The Convalescent Branch is Hove Villa, Brighton, and is 200 feet above sea level.

THE COTSWOLD SANATORIUM

First opened in 1898 and rebuilt in 1925 on the Cotswold Hills seven miles from Cheltenham, for the Treatment of Pulmonary and all other forms of Tuberculosis. Aspect S.S.W., sheltered from North and East, elevation 800 feet. Pure bracing air. SPECIAL TREATMENT by artificial PNEUMOTHORAX (X-ray controlled). TUBERCULINS, and ULTRA-VIOLET RAYS is available when necessary without extra charge. X-RAY plant, Fully Equipped Dental Department, Electric Light Radiators, hot and cold basins and Wireless in all rooms. Up-to-date drainage. Full day & night Nursing Staff. **Terms: 5 to 7½ Guineas a week inclusive.**

Med. Supt.: GEOFFREY A. HOFFMAN, B.A., M.B., T.C. Dub. *Asst. Phys.:* MARGARET A. HARRISON, M.B., B.S. Lond. *Cons. Laryngologist:* G. N. BARKER, F.R.C.S. Edin., D.L.O. *Cons. Dent. Surgeon:* GEORGE V. SAUNDERS, L.D.S.R.C.S. Lond. *Phone:* 81 & 82 Witcombe. Apply: *The Secretary, The Cotswold Sanatorium, Cranham, Gloucester. Telegrams:* "Hoffman, Birdlip."

PRIOR PLACE SANATORIUM

HEATHERSIDE, CAMBERLEY, SURREY.

FOR THE TREATMENT OF PULMONARY TUBERCULOSIS

Well situated on high ground and surrounded by pines and heather.
All rooms are fitted with electric light, wash basins with hot and cold water, and radiators.
X ray plant. Day and night nursing staff.

RESIDENT MEDICAL SUPERINTENDENT: Dr. H. O. BLANFORD, to whom application for admission can be made.

LONDON SCHOOL OF HYGIENE AND TROPICAL MEDICINE
(UNIVERSITY OF LONDON)

Incorporating the Ross Institute

A COURSE OF INSTRUCTION IN

TROPICAL MEDICINE AND HYGIENE

lasting five months will commence on 30TH SEPTEMBER, 1940.

The course is designed primarily to prepare qualified medical practitioners for the examination of the Conjoint Board for the Diploma in Tropical Medicine and Hygiene, but members of the class may qualify for a School Certificate in Tropical Medicine and Hygiene at the end of four months.

The fee for the course is £40.

Arrangements can be made for admission of students to certain parts of the course separately. The fee for these short periods of instruction is 2 guineas per week.

IT IS NOT INTENDED TO HOLD COURSES FOR THE D.P.H. OR THE DIP. BACT. NEXT SESSION.

Further information may be obtained from the Secretary, London School of Hygiene and Tropical Medicine, Keppel-street (Gower-street), W.C.1. (MUSeum 3041.)

Telephone: WELbeck 2728 Telegrams: "ASSISTIAMO, LONDON"

For MEDICAL, SURGICAL, and

MENTAL NURSES

Male or Female

THE NURSES' ASSOCIATION

In conjunction with the MALE NURSES' ASSN.

29, YORK ST., BAKER ST., LONDON, W.1

Mrs. MILLICENT HICKS, *Superintendent* W. J. HICKS, *Secretary*

THE NEW MENTAL NURSES CO-OPERATION

66 Queen's Gardens, Lancaster Gate, W.2.

(Established 1912.)

Specially trained Nurses for Mental and Nerve cases. Also Nurses for all Medical cases. (All Nurses are insured under the Employers Liability Act, 1906.) Apply the Supt.

Telegrams: "Psyconurse, Padd. Lond." *Telephone:* No. 6105 Padd.

STRETTON HOUSE,

Church Stretton, Shropshire.

ESTABLISHED IN 1853.

A PRIVATE HOME for the treatment of gentlemen suffering from Mental and Nervous illness, including the allied Disorders of Alcoholism and the Drug Habit. All types of early Mental and Nervous Cases are received without Certificates as Voluntary Patients under the provisions of the Mental Treatment Act, 1930. Bracing hill country. See "Medical Directory," p. 2358.—Apply to the Medical Superintendent. 'Phone 10 P.O., Church Stretton.

SPRINGFIELD HOUSE

'Phone: BEDFORD 3417. **Near BEDFORD**

For Mental Cases with or without Certificates.

Ordinary Terms: Five Guineas per week (including Separate Bedrooms for all suitable cases without extra charge).

For forms of admission, &c., apply to the Resident Physician, CEDRIC W. BOWER.

INTERVIEWS IN LONDON BY APPOINTMENT.

FENSTANTON, at "FIVE DIAMONDS," Chalfont St. Giles, Bucks.

A Private Home for the Care and Treatment of a limited number of LADIES with Mental and Nervous Disorders. Certified, Voluntary, and Temporary Patients received. Mansion with 12 acres of ground. (*See Medical Directory*, p. 2346.) Apply Resident Physician. Telephone: Little Chalfont 2046. Station: Chalfont and Latimer.

CHISWICK HOUSE,

PINNER, MIDDLESEX.

Telephone: PINNER 234.

A Private Hospital for the Treatment and Care of Mental and Nervous Illnesses in both Sexes.

A modern country house, 12 miles from Marble Arch, in attractive and secluded surroundings. Fees from 10 guineas per week inclusive. Cases under Certificate, Voluntary and Temporary Patients received for treatment.

DOUGLAS MACAULAY, M.D., D.P.M.

THE GROVE HOUSE,

CHURCH STRETTON, SHROPSHIRE.

Private Home for Ladies mentally ill. Voluntary and Temporary Patients received.

Medical Superintendent: Dr. J. A. MCCLINTOCK.

CITY OF LONDON MENTAL HOSPITAL

Near DARTFORD, KENT.

Ladies and Gentlemen received for treatment under certificates, and without certificates as either VOLUNTARY or TEMPORARY PATIENTS, at a weekly fee of £2 9s., and upwards.

PORTSMOUTH CITY MENTAL HOSPITAL

Accommodation is provided for the reception of PRIVATE PATIENTS of both sexes in three detached Villas, which are healthily and pleasantly situated in extensive grounds with sea views.

Charges from 3 guineas weekly, including all necessaries except clothing.—Apply to the Medical Superintendent and Resident Physician, THOMAS BEATON, O.B.E., M.D., F.R.C.P.

MALLING PLACE, KENT

For LADIES and GENTLEMEN of Unsound Mind.

Terms moderate. Apply to Resident Medical Superintendent. Telegrams: ADAM WEST MALLING. Telephone No. 2: MALLING.

ALCOHOLISM

Drug Habits, and Nervous Disorders

25 minutes from London, situated in charming grounds and country, is a "home from home" for those seeking rest and treatment under medical supervision. Fees from 6 guineas. Illustrated brochure on application to the matron.

CHISLEHURST 451

OLD HILL HOUSE

CHISLEHURST, KENT.

THE COPPICE, NOTTINGHAM.

HOSPITAL FOR MENTAL DISEASES.

President: The Right Hon. LORD BELPER.

This Institution is exclusively for the reception of a limited number of PRIVATE PATIENTS of both sexes, of the UPPER and MIDDLE CLASSES, at moderate rates of payment. It is beautifully situated in its own grounds, on an eminence a short distance from Nottingham, and commands an extensive view of the surrounding country; and from its singularly healthy position and comfortable arrangements affords every facility for the relief and cure of those mentally afflicted. Voluntary and Temporary Patients received. Occupational Therapy. For terms, &c., apply to the Medical Superintendent.

Telephone: 64117 Nottingham.

SHAFTESBURY HOUSE

FORMBY-BY-THE-SEA
Nr. LIVERPOOL

Specially built and licensed for the care and treatment of a limited number of Ladies and Gentlemen suffering from NERVOUS and MENTAL breakdown. Voluntary and certified patients received. Ladies also admitted as Temporary Patients without certification. Terms moderate. *Apply*, RESIDENT PHYSICIAN, who may be seen in Liverpool, by appointment. *Tel. No.* 8 *Formby.*

CALDECOTE HALL

NUNEATON
WARWICKSHIRE
('Phone : Nuneaton 241)

Residential treatment of
"Nervous Disorders" & Alcoholism
(Certifiable cases are not received)

This beautiful mansion situated in the heart of the country (less than two hours from London by L.M.S.R.) and surrounded by charming pleasure grounds in which games and outdoor occupational therapy are available is devoted to the treatment of Alcoholism and "Nerves" by psychotherapeutic and ancillary methods.

Illustrated Brochure and particulars obtainable from A. E. CARVER, M.D., D.P.M., Resident Medical Superintendent.

BROOKE HOUSE, CLAPTON

A PRIVATE HOME for the treatment of Nervous and Mental Disorders in both sexes. Situated in nine acres of Pleasure Grounds.

Voluntary, Temporary, and Certified Patients received.

For further particulars apply—
Dr. ERNEST ROLLINS, Resident Physician.
Tel.: Amherst 1642.

THE MAGHULL HOMES FOR EPILEPTICS (Inc.)

MAGHULL (near LIVERPOOL)

FARMING and OPEN AIR OCCUPATION for PATIENT
A few vacancies in 1st and 2nd Class Houses.
FEES: 1st Class (men only) from £5 5s. per week upwards.
2nd Class (men and women) 32/- per week.

For further particulars apply: C. EDGAR GRISEWOOD, A.C.A., *Secretary*, 20, Exchange Street East, Liverpool, 2

HEIGHAM HALL, NORWICH

PRIVATE MENTAL HOME for Nervous and Mental illness. All forms of treatment available. Fees from 4 gns. per week upwards, according to requirements. Vacancies occasionally exist at reduced fees on the recommendation of the patient's own physician.

Apply to Dr. J. A. SMALL. Telephone: Norwich 60.

UNIVERSITY EXAMINATION POSTAL INSTITUTION

17, RED LION SQUARE, LONDON, W.C.1

Over 50 years' experience

POSTAL AND ORAL COACHING
FOR
ALL MEDICAL EXAMINATIONS

MEDICAL PROSPECTUS (36 pages),
sent gratis, along with List of Tutors, &c., on application to the Principal, 17, Red Lion-square, London, W.C.1. (Telephone: HOLborn 6313.)

Queen's Hospital for Children,
Hackney-road, E.2.

CASUALTY OFFICER (A) required 1st September, 1940.
HOUSE PHYSICIAN (B2) required 15th September, 1940.
Six months' appointments. Salary at rate of £100 per annum, with board, lodging, and laundry in each case. Candidates must be prepared to participate in the emergency hospital arrangements in connexion with which beds have been reserved and in respect of which additional remuneration is payable.

Applications must be made on forms to be obtained from the undersigned and be sent in, with copies of not more than three testimonials, on or before the 22nd of August.

CHARLES H. BESSELL, Secretary.

Hampstead General Hospital,
Haverstock-hill, N.W.3.

OUT-PATIENT DEPARTMENT—CAMDEN TOWN, N.W.1.

Applications are invited from registered Single Medical Women for the resident appointment of CASUALTY SURGICAL OFFICER for six months, vacant 1st September next, at the Out-patient Department, Camden Town. Salary £100 per annum, plus an allowance of £50 per annum for duties in connexion with the First-aid Post established there.

Applications on the prescribed form, with copies of three testimonials, to be returned by 24th August.

KENNETH A. F. MILES, Secretary.

The Willesden General Hospital,
Harlesden Road, N.W.10.

Applications are invited for the appointment of HONORARY CLINICAL ASSISTANT to the Medical Out-patient Session, held on Friday mornings.

Applications should be forwarded to the Secretary, from whom further details of the appointments may be obtained, and should be received not later than 14th August, 1940.

Borough of Ealing.

MATERNITY AND CHILD WELFARE SERVICES.

WOMAN ASSISTANT MEDICAL OFFICER.

Applications are invited from duly qualified Medical Practitioners for the position of Woman Assistant Medical Officer.

The duties will mainly consist of work in connection with the Council's Maternity and Child Welfare Scheme, embracing attendance at the health centres, and medical attendance on patients in the Perivale Maternity Hospital. The person appointed will reside at this hospital, board and furnished rooms being provided for her.

Applications must have had previous experience of maternity and child welfare work, and particularly of work in a maternity hospital.

The person appointed will be required to devote her whole time to the duties and will not be allowed to engage in private practice.

The salary will be at the rate of £450 per annum, rising by £25 per annum to a maximum of £550, plus board and residence as indicated above and valued at £150 per annum. A deduction will be made in accordance with the provisions of the Local Government and Other Officers' Superannuation Act, 1937, and the appointment will be subject to the candidate passing the Council's medical examination in connection therewith. Canvassing will be a disqualification.

Copies of the application form and terms of appointment can be obtained from Dr. Thomas Orr, Medical Officer of Health, Town Hall, Ealing, W.5, to whom applications, accompanied by copies of not more than three recent testimonials, must be delivered not later than Thursday, 22nd August, 1940.

Town Hall, Ealing, W.5. R. H. WANKLYN, Town Clerk.

Bolingbroke Hospital, Wandsworth Common, S.W.11.

Applications are invited from registered Medical Practitioners (Male) for the appointment of CASUALTY OFFICER (A) to become vacant on September 1st, including R Practitioners within three months of qualification. If held by an R Practitioner appointment will be for a period of six months, otherwise reappointment for a further period will be considered. Salary is at the rate of £120 per annum, with full residential emoluments.

Applications, stating age, qualifications, with dates and nationality, and accompanied by copies of three recent testimonials, should be sent to the undersigned not later than 12th August, 1940.

W. S. RANDOLPH-BISS, Secretary-Superintendent.

General London Ophthalmic Hospital,
Judd-street, W.C.1.

Applications are invited from registered Medical Practitioners for the post of HOUSE SURGEON (B2), vacant on September 2nd. If held by an R Practitioner the appointment will be limited to six months, otherwise it will be for a period of one year. Salary at the rate of £200 per annum, with board and residence.

Applications and testimonials (copies only) should reach the undersigned by August 20th.

GEORGE WATTS, Secretary.

Royal National Orthopædic Hospital.

Applications are invited from registered Medical Practitioners (Male) for the appointment of RESIDENT HOUSE SURGEON (B2) at the Royal National Orthopædic Hospital, Great Portland-street, W.1. Salary £200 per annum, with board, quarters, laundry, &c. Duties to commence September 1st. Six months' appointment.

Applications, stating age, nationality, qualifications, and previous experience, with copies of testimonials, should be sent to the Secretary, 234, Great Portland-street, W.1, not later than August 15th.

His Majesty's Colonial Service.

GOVERNMENT OF PALESTINE.

A vacancy exists for a WOMAN MEDICAL OFFICER in the DEPARTMENT OF HEALTH, Palestine.

Candidates must be British subjects of European parentage, unmarried, and not more than thirty-five years of age. They should possess a medical qualification registrable in the United Kingdom and have had special training in maternity work and in gynæcology and experience in venereal diseases.

SALARY AND TERMS OF APPOINTMENT.

£P.650 a year consolidated, plus £P.100 expatriation allowance. (£P.1 equals £1 sterling.)

Private practice is not allowed.

The appointment is non-pensionable and on a renewable agreement of three years. Free quarters are not provided. Free passage and leave at the rate of four days for each completed month of resident service.

DUTIES.

To conduct gynæcological and antenatal clinics and medical clinics at infant welfare centres. To undertake the treatment of venereal diseases among women.

Forms of application may be obtained on written request to the Director of Recruitment (Colonial Service), 29, Queen Anne's-gate, London, S.W.1.

Completed applications must be received not later than the 31st of August.

Resident Assistant Surgical Officer

(B1) required by MIDDLESEX COUNTY COUNCIL for CENTRAL MIDDLESEX COUNTY HOSPITAL, Acton-lane, N.W.10—modern, well-equipped general hospital with over 1000 Beds.

Registered Medical Practitioners, including suitably qualified R Practitioners holding B2 or B1 appointments. Must have held house appointments in general hospitals and had special surgical experience.

Salary £400–£25–£475 per annum. Board, lodging, laundry.

Whole-time duties as County Council may direct under supervision of Medical Superintendent. For four years only, subject to medical examination and one month's notice. Vacant from 25th August.

Application, stating age, nationality, qualifications with dates, experience, and details of previous appointment, to the undersigned. No application forms provided. Relationship to any member or officer of Council to be disclosed. Copies of not more than three recent testimonials.

Canvassing, directly or indirectly, will disqualify. Closing date 24th August.

C. W. RADCLIFFE, "B3."

Guildhall, Westminster, S.W.1.

Dreadnought Seamen's Hospital,

Greenwich, S.E.10.

Applications are invited from Male registered Medical Practitioners for the appointment of HOUSE SURGEON (A) now vacant, including R Practitioners within three months of qualification. The appointment will be for six months, with salary at the rate of £155 per annum, with full residential emoluments.

Applications, stating age, qualifications with dates, and nationality, accompanied by copies of recent testimonials, should be sent to the undersigned immediately.

F. A. LYON, Secretary.

The Royal Cancer Hospital (Free)

(Incorporated under Royal Charter),
Fulham-road, London, S.W.3.

Applications are invited for the post of HOUSE SURGEON (A) to commence duties on the 1st October, 1940. Candidates must be unmarried. Salary at the rate of £100 per annum. The appointment is for six months and subject to rules, a copy of which can be obtained from the Secretary.

Applications, to be made on a form which will be supplied by the Secretary, with copies only of not more than three testimonials, to be sent to the Secretary not later than the first post Monday, 19th August, 1940.

CLEMENT COBBOLD, Secretary.

Hampstead General Hospital,

Haverstock-hill, N.W.3.

Applications are invited from Single Medical Men for two posts of HOUSE SURGEON (B2) for six months, vacant 1st September next. Salary £133 6s. 8d. per annum.

Applications on the prescribed form, with copies of three testimonials, to be returned to the Secretary by the 24th August.

KENNETH A. F. MILES, Secretary.

The Hostel of St. Luke

(The Clergy Nursing Home)
14, Fitzroy-square, London, W.1.

APPOINTMENT OF RESIDENT MEDICAL OFFICER (B2).

Applications are invited from registered Medical Practitioners (Male or Female), British nationality, for the appointment of Resident Medical Officer (B2), including R Practitioners who now hold A Posts. If held by an R Practitioner, the appointment will be limited to six months, otherwise it will be for a period of six months and may be renewable for a further period of six months. The salary is at the rate of £200 per annum, with full residential emoluments.

Applications, stating age, qualifications, with dates, nationality and present post, and accompanied by copies of three recent testimonials, should be sent to the undersigned as soon as possible.

J. A. CAMPBELL, Capt. R.N. Retd., Secretary.

Royal College of Obstetricians and Gynæcologists.

The next Examination for the Diploma (D.R.C.O.G.) will be held on OCTOBER 14TH (Written) and OCTOBER 15TH (Clinical and Viva Voce).

Application for entrance to the Examination (on the prescribed form obtainable from the Honorary Secretary) must be made not later than Tuesday, September 3rd, 1940.

From March, 1941, candidates who are successful in the Examination for the Diploma will be required to pay a fee of £5 5s. before being granted the Diploma of the College.

58, Queen Anne-street, London, W.1.

Queen Charlotte's Maternity Hospital,

Marylebone-road, N.W.1.

APPOINTMENT OF RESIDENT ANÆSTHETIST AND DISTRICT RESIDENT MEDICAL OFFICER (A).

Applications are invited from registered Medical Practitioners for the combined appointment of Resident Anæsthetist and District Resident Medical Officer.

Duties can commence as soon as possible. Successful candidate proceeding to post of District Resident Medical Officer on 1st October for three months.

Salary £90 per annum, with full residential emoluments. This appointment does not exceed six months. Allowance for car (for district duties).

Applications, stating age, qualifications with dates, any previous appointments, and accompanied by copies of three recent testimonials, should be sent to the undersigned as soon as possible. (No aliens.)

SEYMOUR LESLIE, Acting Secretary-Superintendent.

The Prince of Wales's General HOSPITAL, London, N.15.

Applications are invited from registered Medical Practitioners, Male, for the appointments of a JUNIOR HOUSE PHYSICIAN (A) and a JUNIOR HOUSE SURGEON (A) to become vacant on September 1st, 1940, including R Practitioners within three months of qualification.

The appointment will be for a period of six months. Salary is at the rate of £90 per annum, with full residential emoluments.

Applications, stating age, qualifications with dates, and nationality, and accompanied by copies of three recent testimonials, should be sent to the undersigned not later than Monday, August 26th, 1940.

J. C. BURDETT, Director and House Governor.

6th August, 1940.

The Hospital for Sick Children,

Great Ormond-street, London, W.C.1.

Applications are invited from registered Medical Practitioners, Male and Female, for the appointments of HOUSE PHYSICIAN (B2) and HOUSE SURGEON (B2) to become vacant on the 1st October, 1940, including R Practitioners who hold A Posts.

The appointments are tenable for six months, salaries at the rate of £100 per annum, with full residential emoluments.

Further particulars and forms of application, which must be returned not later than the 23rd September, 1940, are obtainable from the undersigned.

HERBERT F. RUTHERFORD, Secretary.

August, 1940.

Albert Dock Hospital.

(Seamen's Hospital Society.)

Applications are invited from Male registered Medical Practitioners for the appointment of RESIDENT HOUSE PHYSICIAN (B2) to become vacant on 1st September, including R Practitioners who now hold "A" post. The appointment will be for six months and salary is at the rate of not less than £155 per annum, with full residential emoluments.

Applications, stating age, qualifications with dates, nationality, and present post, and accompanied by copies of three recent testimonials, should be sent to the undersigned immediately.

F. A. LYON, Secretary.

Seamen's Hospital Society, Greenwich, S.E.10.

Royal Chest Hospital,

City-road, E.C.1.

A vacancy occurs for a TEMPORARY ASSISTANT SURGEON to the Hospital and applications are invited for the appointment. Candidates must be Fellows of the Royal College of Surgeons of England.

Particulars of the office and details with regard to the submission of testimonials, &c., may be obtained from the undersigned, to whom applications should be sent not later than August 16th.

GILBERT G. PANTER, Secretary.

Royal Northern Hospital, Holloway, N.7.

Elizabeth Garrett Anderson Hospital,

Euston-road, N.W.1.

Applications are invited from fully qualified Medical Women for the part-time post of SURGICAL REGISTRAR—non-resident. Salary £550 per annum for applicants with F.R.C.S. qualification; other applicants would be considered with remuneration on a lower scale. Salaries subject to renewal when new contracts are issued by Ministry of Health. Duties to commence 3rd September.

Particulars of the post may be had from the undersigned, to whom applications, with copies of three recent testimonials, should be sent not later than the 23rd August.

LESLIE J. WILKIE, Secretary.

County Borough of Croydon.

ASSISTANT MEDICAL OFFICER IN THE OBSTETRIC SERVICE (B1).

Applications are invited for this post from registered Medical Practitioners of either sex. Candidates must have had practical hospital experience in Gynæcology and Obstetrics, and of ante-natal and post-natal clinics. Suitably qualified R Practitioners holding B2 or B1 appointments are invited to apply. The appointment will be for twelve months. Salary £350 per annum, with board, residence (at Mayday Hospital), and laundry valued at £140.

The officer appointed will be on the staff of the Medical Officer of Health and work under his administrative supervision.

Application forms may be obtained from the Medical Officer of Health on receipt of a stamped addressed foolscap envelope, and should be returned to him not later than 11 A.M., Monday, 19th August, 1940, together with copies of three testimonials of recent date. Canvassing will disqualify.

E. TABERNER, Town Clerk.

Town Hall, Croydon, 3rd August, 1940.

Dorset County Council.

PORTWEY HOSPITAL.
(214 Beds, shortly to be increased to 334.)

RESIDENT SURGICAL OFFICER (B1 APPOINTMENT).

Applications are invited from registered Medical Practitioners for the above appointment to become vacant 3rd September, 1940. Applicants must have held house appointments and have had surgical experience. Preference will be given to candidates holding the diploma of F.R.C.S. Suitably qualified Practitioners holding B1 or B2 appointments are invited to apply. The commencing salary is at the rate of £350 per annum.

Applications, stating age, nationality, qualifications, experience, details of previous appointments, accompanied by copies of three recent testimonials, to be sent to the Medical Superintendent not later than 19th August, 1940.

RESIDENT ANÆSTHETIST (B1).

Applications are invited from registered Medical Practitioners for the above appointment to become vacant 3rd September, 1940. Applicants should have held house appointments, including that of Resident Anæsthetist. Preference will be given to candidates holding the diploma of D.A. The duties will also include the care of Medical Beds. Salary to be paid at the rate of £350 per annum. Suitably qualified R Practitioners holding B1 or B2 appointments are invited to apply.

Applications, stating age, nationality, qualifications, experience, details of previous appointments, accompanied by copies of three recent testimonials, to be sent to the Medical Superintendent not later than the 19th August, 1940.

Grosvenor Sanatorium, Ashford, Kent.

APPOINTMENT OF A HOUSE PHYSICIAN (A).

Applications are invited from registered Medical Practitioners, Male and Female, for the appointment of a House Physician (A) to become vacant on September 1st. If held by an R Practitioner the appointment will be limited to six months. Salary is at the rate of £150 per annum, with full residential emoluments.

Applications, stating age, qualifications with dates, and nationality, and accompanied by copies of three recent testimonials, should be sent to the undersigned not later than August 20th.

B. ROBERTS, Medical Superintendent.

Grosvenor Sanatorium, Ashford, Kent.

Royal Infirmary, Bradford.

HOUSE SURGEON (A) (Male) wanted 1st September. Six months' appointment. Candidates must be single and legally qualified. Salary £150 per annum, with board, residence, and laundry.

There are 345 Beds and 10 Resident Officers.

Applications, stating age, nationality, qualifications, and previous experience, with copies of recent testimonials, should be sent to the undersigned as soon as possible.

H. TRUSSON, House Governor and Secretary.

6th August, 1940.

Mansfield & District General Hospital.

(150 Normal Beds; 106 War Emergency Beds.)

Applications are invited from registered Medical Practitioners, including R Practitioners within three months of qualification, for the appointment of a Male HOUSE SURGEON (A). Duties to commence as soon as possible. If held by an R Practitioner, the appointment will be for a period of six months.

Salary at the rate of £150 per annum, with full residential emoluments.

Applications, stating age, qualifications with dates, and nationality, and accompanied by three copies of recent testimonials, should be sent to the undersigned forthwith.

A. ASHWORTH, Secretary.

Wrexham and East Denbighshire

WAR MEMORIAL HOSPITAL.
(170 Beds.)

RESIDENT HOUSE SURGEON (B2) (Male or Female). Appointment is for six months, commencing August 28th. Salary £150 per annum, with board and lodging.

Applications to be addressed, stating age, nationality, experience, and qualifications, together with copies of three recent testimonials, to the undersigned immediately.

LESLIE SPENCER, Secretary.

August 3rd, 1940.

East Suffolk and Ipswich Hospital.

(380 Beds—8 Residents.)

Applications are invited from registered Medical Practitioners (including R Practitioners who now hold A Posts) for the appointment of HOUSE SURGEON to the ORTHOPÆDIC DEPARTMENT (B2) to become vacant on 30th September. The appointment is for six months. Salary at the rate of £144 per annum, with full residential emoluments.

Applications, stating age, qualifications with dates, nationality, and present post, and accompanied by copies of three recent testimonials, to be sent to the undersigned.

ARTHUR GRIFFITHS, Secretary.

The Hospital, Ipswich, 10th August, 1940.

East Suffolk and Ipswich Hospital.

(380 Beds—8 Residents.)

Applications are invited from registered Medical Practitioners (including R Practitioners within three months of qualification) for the appointment of a HOUSE SURGEON (A) and a CASUALTY OFFICER (A) to become vacant on 30th September. Appointment will be for six months. Salary at the rate of £144 per annum, with full residential emoluments.

Applications, stating age, qualifications with dates, and nationality, and accompanied by copies of three recent testimonials, to be sent to the undersigned.

ARTHUR GRIFFITHS, Secretary.

The Hospital, Ipswich, 10th August, 1940.

City Hospital, Chester.

APPOINTMENT OF RESIDENT MEDICAL OFFICER (B2).

Applications are invited from registered Medical Practitioners for the appointment of R.M.O., including R Practitioners who now hold A Posts. If held by an R Practitioner the appointment will be limited to six months, otherwise it will be for a period of twelve months. The salary is at the rate of £200 per annum, with full residential emoluments.

Applications, stating age, qualifications with dates, nationality, and present post, and accompanied by copies of three recent testimonials, should be received by the Medical Officer of Health, Town Hall, Chester, not later than Friday, 16th August.

Canvassing will disqualify and relationship to members or officers of the City Council must be disclosed.

Northampton Education Committee.

Applications are invited from qualified and registered Medical Men under forty-five years of age holding a diploma in Public Health for appointment as ASSISTANT SCHOOL MEDICAL OFFICER.

Salary will be at the rate of £700 per annum, rising, on approved service, by annual increments of £25 to £800 per annum. The appointment will be subject to the provisions of the Local Government Superannuation Act, 1937.

A form of application and particulars of the appointment may be obtained from the undersigned, by whom completed applications must be received by not later than the 20th August, 1940.

H. C. PERRIN, Secretary for Education.

Education Office, "Springfield," Cliftonville, Northampton.

County Borough of Blackburn.

PUBLIC ASSISTANCE DEPARTMENT.

RESIDENT JUNIOR ASSISTANT MEDICAL OFFICERS (A).

Applications are invited from registered Medical Practitioners (Male or Female) for appointments of two Resident Junior Assistant Medical Officers at QUEEN'S PARK HOSPITAL AND INSTITUTION, including R Practitioners within three months of qualification.

The staff consists of a Resident Medical Officer, two Resident Junior Assistant Medical Officers (including the appointment above mentioned), Consulting Surgeon, Laboratory Assistant, and X-ray Attendant.

There is a separate Hospital, separate Mental Block, and a separate Hospital for Children, and there is opportunity for experience in all departments, including Medical, Surgical, and Midwifery cases. An X-ray apparatus is installed.

The persons appointed will be required to devote the whole of their time to the duties and to act as may be directed by the Resident Medical Officer. The appointments will be limited to a term not exceeding one year.

If held by an R Practitioner, appointment will be for a period of six months.

Salary at the rate of £200 per annum, together with board, apartments, and attendance.

Applications, stating age, qualifications, and experience, and accompanied by copies of not more than three recent testimonials, must be sent to the Public Assistance Officer, Cardwell-place, Blackburn.

CHAS. S. ROBINSON, Town Clerk.

Town Hall, Blackburn, 2nd August, 1940.

Bootle General Hospital, Liverpool, 20.

(131 Beds.)

APPOINTMENT OF CASUALTY OFFICER (A).

Applications are invited from registered Medical Practitioners, Male and Female, for the appointment of Casualty Officer for the period ending 31st December, 1940.

Salary is at the rate of £150 per annum, with full residential emoluments.

Applications, stating age, qualifications with dates, and nationality, and accompanied by copies of three recent testimonials, should be sent to the undersigned immediately.

A. J. COOPER, Secretary-Superintendent.

County Borough of Northampton.

APPOINTMENT OF TEMPORARY ASSISTANT MEDICAL OFFICER FOR MATERNITY AND CHILD WELFARE WORK.

The Town Council of Northampton invites applications from registered Medical Women between the ages of twenty-five and forty-five years for the above whole-time appointment.

Applicants should have had at least three years' experience in the practice of their profession and have had special experience in midwifery and antenatal work and administrative duties in connexion with maternity and child welfare. They should also be registered in the Medical Register as holders of a diploma in sanitary science, public health, or State medicine.

The officer appointed will be required to devote her whole time to the duties of the office. These comprise such administrative and clinical work, under the direction and supervision of the Medical Officer of Health, as may reasonably appertain to the Council's scheme of maternity and child welfare.

The salary is £600 per annum, plus a temporary cost-of-living bonus at present amounting to £24 per annum. The post is subject to the Local Government Superannuation Acts and the selected candidate will be required to pass satisfactorily a medical examination.

Copies of application forms and list of duties may be obtained from the Medical Officer of Health, 7A, St. Giles'-square, Northampton.

Applications, accompanied by copies of not more than three recent testimonials, must reach the undersigned not later than Wednesday, 21st August, 1940. W. R. KEW, Town Clerk.

Guildhall, Northampton, 30th July, 1940.

The Southampton Children's Hospital

AND DISPENSARY FOR WOMEN.

The Board of Management invite applications for the post of RESIDENT MEDICAL OFFICER (Lady).

Salary at the rate of £150 per annum, with board, residence, and laundry.

Applications, stating age and accompanied by copies of testimonials, to be sent to the undersigned not later than the 19th August, 1940.

The selected candidate will be required to take up her duties on the 31st August, 1940. The appointment is for six months.

ELLA K. MATTHEWS, Secretary.

Warrington Infirmary and Dispensary.

Applications are invited from registered Medical Practitioners, Male, for the appointment of a HOUSE SURGEON (A) to become vacant on 1st October, 1940, including R Practitioners within three months of qualification. If held by an R Practitioner, appointment will be for a period of six months. Otherwise it will be for a period of twelve months. Salary at the rate of £150 per annum, with full residential emoluments.

Applications, stating age, qualifications with dates, and nationality, and accompanied by recent testimonials, should be sent to the undersigned not later than Tuesday, 13th August, 1940. HENRY L. BOOT, Superintendent and Secretary.

Crichton Royal, Dumfries.

HOUSE PHYSICIAN (Male or Female) required for the above Mental Hospital. Salary £200 per annum. Yearly appointment. Excellent opportunity for post-graduate work. The Hospital provides facilities for treatment in all its aspects and is equipped with up-to-date laboratories.

Applications, together with copies of three recent testimonials, to be forwarded to the Physician Superintendent, Crichton Royal, Dumfries.

Kent and Sussex Hospital,

TUNBRIDGE WELLS.

APPOINTMENT OF RESIDENT SURGICAL OFFICER (B1).

Applications are invited from registered Medical Practitioners (Male) for the post of Resident Surgical Officer to become vacant on September 1st. Applicants should have held house appointments and had surgical experience. Preference given to candidates holding Diploma of Fellow of Royal College of Surgeons, but this qualification not essential. Suitably qualified registered Practitioners holding B2 or B1 appointments are invited to apply.

Salary at the rate of approximately £350 per annum, according to experience.

Applications, stating age, nationality, qualifications with dates, experience, and details of previous appointments, accompanied by copies of three recent testimonials, should be sent to the undersigned not later than 20th August, 1940.

TOM B. HARRISON, Superintendent-Secretary.

3rd August, 1940.

The Welsh National School of Medicine.

(UNIVERSITY OF WALES.)

Applications are invited for the full-time post of ASSISTANT LECTURER in the DEPARTMENT OF PATHOLOGY AND BACTERIOLOGY of The Welsh National School of Medicine, Cardiff, at a salary at the rate of £500 per annum.

The person appointed will be required to commence duty as soon as possible.

Further particulars of the appointment may be obtained from the undersigned.

S. C. EDWARDS, Secretary.

The Welsh National School of Medicine, The Parade, Cardiff.

Borough of Oldbury.

ASSISTANT MEDICAL OFFICER OF HEALTH.

The Council invite applications for the above appointment from registered Medical Practitioners, preferably holding the Diploma of Public Health and with experience in antenatal work. Preference will be given to those who have held a resident appointment at a maternity hospital with an antenatal clinic.

The person appointed will be required to devote the whole of his or her time to duties which will be performed under the direction of the Medical Officer of Health, and will consist chiefly of School Medical and Maternity and Child Welfare work, together with such other duties relating to Public Health and Civil Defence as may be required.

Salary will commence at £600 per annum, rising by annual increments of £50 to £700 per annum, with £30 per annum travelling allowance. At present a war bonus of £24 is also paid at the discretion of the Council.

Application forms, with further particulars of the appointment, may be obtained from the undersigned and should be returned, together with copies of three recent testimonials, not later than the first post on the 24th August, 1940, endorsed "Assistant Medical Officer."

ARTHUR CULWICK, Town Clerk.

Municipal Buildings, Oldbury, 1st August, 1940.

Hull Royal Infirmary.

Applications are invited from registered Medical Practitioners (Male), including R Practitioners within three months of qualification, for the post of—

(1) CASUALTY OFFICER (A), vacant now. If held by an R Practitioner the appointment will be for a period of six months.

Applications are also invited for the following posts:—

(2) HOUSE SURGEON (B2) to the OPHTHALMIC and EAR, NOSE, AND THROAT DEPARTMENTS, vacant now. The post is recognised for the D.O.M.S. and D.L.O. examinations.

(3) HOUSE SURGEON (B2) at the SUTTON BRANCH HOSPITAL, vacant August 31st. The post is recognised for the F.R.C.S. and London M.S. examinations.

R Practitioners who hold A posts may apply for post (2) or (3). If an R Practitioner is appointed the appointment will be limited to six months.

Salary: Posts (1) and (2) £150, Post (3) £160 per annum, with full residential emoluments.

Applications, stating age, qualification with dates, and nationality, and accompanied by copies of recent testimonials, should be sent to the undersigned.

R. J. CARLESS, House Governor.

Worcester Royal Infirmary.

Applications are invited for the post of PATHOLOGIST. Commencing salary £800 per annum—private consulting practice permitted.

Applications, giving full particulars of experience and qualifications, and copies of three testimonials, should reach the undersigned not later than 17th August, 1940.

H. J. CLOUT.

Chorley and District Hospital,

CHORLEY, LANCS.

(Voluntary General Hospital with 75 Beds.)

Applications are invited from registered Medical Practitioners, Male and Female, for the appointment of HOUSE SURGEON (A) now vacant, including R Practitioners within six months of qualification. If held by an R Practitioner, appointment will be limited to six months, otherwise the appointment is renewable for a further period. Salary £150 per annum.

Applications, stating age, qualifications with dates, and nationality, and accompanied by copies of three recent testimonials, should be sent to the undersigned at once.

C. H. SPENCE, Secretary-Superintendent.

King George's Sanatorium for Sailors,

LIPHOOK, HANTS (Seamen's Hospital Society)

(For the Treatment of Pulmonary and Non-pulmonary Tuberculosis.)

ASSISTANT MEDICAL OFFICER (B2—Male or Female).

Applications are invited for this appointment which will be available for a period of six months from 1st September, 1940. Salary at the rate of £250 per annum, together with full residential emoluments valued at £100 per annum.

Applications, stating age, qualifications, and experience, with copies of three recent testimonials, to be sent immediately to the undersigned. F. A. LYON, Secretary.

Seamen's Hospital Society, Greenwich, S.E.10.

Swansea General and Eye Hospital,

(336 Beds.)

Applications are invited from registered Medical Practitioners (Male) for the appointment of a HOUSE PHYSICIAN (A) to become vacant on the 22nd August, including R Practitioners within three months of qualification.

If held by an R Practitioner, appointment will be limited to six months.

Salary £150 per annum, with full residential emoluments.

Applications, stating age, qualifications with dates, and nationality, and accompanied by copies of three recent testimonials, should be forwarded to the undersigned.

O. C. HOWELLS, Secretary-Superintendent.

West Berks United Districts.

APPOINTMENT OF TEMPORARY MEDICAL OFFICERS OF HEALTH.

The Joint Committee of the West Berks United Sanitary District invite applications for the appointment of two temporary Medical Officers of Health for the areas of (*a*) North Berks and (*b*) South Berks, respectively.

Applicants must be registered Medical Practitioners, not under thirty years of age, holding a diploma in public health, sanitary science, or state medicine. Previous local government experience will be an additional qualification.

The appointments are, with the consent of the Minister of Health, temporary pending the rearrangement of the West Berks United District, and are subject to three months' notice on either side.

The salary offered is £800 per annum and the post will be subject to the provisions of the Local Government (Superannuation) Acts.

The persons appointed will not be permitted to engage in private practice and must devote the whole of their time to the duties of their office.

The person appointed for North Berks must reside at Abingdon and the person appointed for South Berks at Newbury.

Office accommodation and clerical assistance will be provided and a travelling allowance will be paid. The officers appointed will be expected to provide their own motor-cars.

Forms of application, with particulars of the appointment, can be obtained from the undersigned Clerk of the United District Committee, to whom applications should be forwarded not later than the 26th day of August, 1940.

BROMLEY CHALLENOR,
Clerk of the West Berks United District Committee.
67, Stert-street, Abingdon, Berks.
29th July, 1940.

Hospital of St. Cross, Rugby.

APPOINTMENT OF RESIDENT MEDICAL OFFICER (A).

Applications are invited from registered Medical Practitioners (Male) for the appointment of a Resident Medical Officer (A), now vacant, including R Practitioners within six months of qualification. If held by an R Practitioner, appointment will be limited to six months. Otherwise it will be for a period of six months, at the end of which time applicants will be eligible for reappointment for a further six months.

Salary is at the rate of £150 per annum, with full residential emoluments.

Applications, stating age, qualifications with dates, and nationality, and accompanied by copies of three recent testimonials, should be sent to the undersigned immediately.

HARVEY RACE, Superintendent and Secretary.

Isle of Ely County Council.

(Amended Advertisement.)

ASSISTANT COUNTY MEDICAL OFFICER (FEMALE).

Applications are invited from duly qualified persons for the above post. Salary of £600 per annum, rising by two annual increments of £50 to £700 per annum. Duties will include school medical inspection, Maternity and Child Welfare, &c. Experience in tuberculosis, refraction, or mental deficiency will be an additional recommendation. The provision of a car will be required, and travelling expenses in accordance with the Council's scale will be allowed.

The person appointed will be required to devote her whole time to the duties involved. The Local Government Superannuation Act, 1937, will apply, and it will be necessary for the successful candidate to pass a medical examination.

Forms of application may be obtained from the County Medical Officer, County Hall, March, to whom they should be returned, accompanied by copies of not more than three recent testimonials, not later than the 14th August, 1940.

Canvassing, directly or indirectly, will disqualify.

R. F. G. THURLOW, Clerk of the County Council.
County Hall, March, 26th July, 1940.

The Royal Hospital, Sheffield.

(422 Beds.)

Applications are invited from registered Medical Practitioners, Male and Female, for two appointments now vacant, HOUSE PHYSICIAN (A) and RESIDENT ANÆSTHETIST who also acts as House Physician (A), including R Practitioners within three months of qualification. If held by an R Practitioner, appointment will be for a period of six months. Salary is at the rate of £80 per annum, with full residential emoluments.

Applications, stating age, qualifications with dates, and nationality, and accompanied by copies of three recent testimonials, should be sent to the Superintendent at once.

Lincoln County Hospital.

APPOINTMENT OF HOUSE SURGEON (B1).

Applications are invited from registered Practitioners for the appointment of House Surgeon to become vacant on 1st September, 1940.

Applicants should have held house appointments and had surgical experience. Suitably qualified R Practitioners holding B1 or B2 appointments are invited to apply. Salary is at the rate of £200 per annum.

Applications, stating age, nationality, qualifications with dates, experience, and details of previous appointments, and accompanied by copies of three recent testimonials, should be sent to the undersigned.

ARTHUR MOORE, Secretary-Superintendent.
Lincoln, 1st August, 1940.

General Hospital, Nottingham.

(389 Beds.)

EAR, NOSE, AND THROAT DEPARTMENT.

Applications are invited from registered Medical Practitioners (Male and Female) for the appointment of a HOUSE SURGEON (A) for the above Department containing 40 Beds and a large Out-patient Department: duties to commence as soon as possible. The appointment is for six months. Salary at the rate of £200 per annum, with full residential emoluments.

Applications, stating age, qualifications with dates, and nationality, and accompanied by copies of three recent testimonials, should be sent to the undersigned immediately.

HENRY M. STANLEY, House Governor and Secretary.

Horton General Eye Hospital, Banbury, Oxon.

APPOINTMENT OF RESIDENT MEDICAL OFFICER (B2)

Applications are invited from registered Medical Practitioners, Male or Female.

Appointment becomes vacant on 21st August, 1940. The appointment is limited to 6 months. Salary at the rate of £150 per annum, with full residential emoluments.

Applications, stating age, qualifications with dates, nationality and present post (if any) accompanied by copies of 3 recent testimonials, should be sent to the undersigned not later than Monday, 5th August, 1940.

RICHARD H. PRESCOTT,
Secretary and House Governor.

County Borough of Halifax.

ASSISTANT MEDICAL OFFICER OF HEALTH—MATERNITY AND CHILD WELFARE (FEMALE).

Applications are invited from duly qualified and registered Medical Practitioners for the post of whole-time Assistant Medical Officer of Health—Maternity and Child Welfare (Female).

Applicants must be experienced in Antenatal Work, Midwifery, and Children's Diseases, and will be required to hold consultations at the Antenatal and Maternity and Child Welfare Centres in the County Borough of Halifax and to perform such other duties as appertain to the office.

The person appointed will be a member of the staff of the Medical Officer of Health and will work under his control and direction. She will be required to devote her whole time to the duties of her office and not to engage in private practice of any description.

The salary offered is £500 per annum, rising by annual increments of £25 to £700, and the post will be subject to the provisions of the Local Government Superannuation Act, 1937.

Applications must be made on the prescribed form, to be obtained from the undersigned, and delivered, accompanied by copies of three recent testimonials, not later than first post on Tuesday, 20th August, 1940, endorsed "Assistant M.O.H.—Maternity and Child Welfare" and addressed to the Town Clerk, Town Hall, Halifax.

Canvassing, either directly or indirectly, will be a disqualification.

W. USHER, Town Clerk.
Town Hall, Halifax, 26th July, 1940.

Grimsby and District Hospital.

RESIDENT ANÆSTHETIST AND JUNIOR HOUSE SURGEON (A).

Applications are invited from registered Medical Practitioners for the above appointment, including R Practitioners within three months of qualification. If held by an R Practitioner, appointment will be for a period of six months. Salary is £175 per annum.

Applications, stating age, qualifications with dates, and nationality, and accompanied by copies of three recent testimonials, should be sent to the undersigned.

H. B. COATES, Secretary-Superintendent.
3rd August, 1940.

Grimsby and District Hospital.

APPOINTMENT OF CASUALTY OFFICER (A).

Applications are invited from registered Medical Practitioners for the appointment of Casualty Officer, including R Practitioners within three months of qualification. If held by an R Practitioner, appointment will be for a period of six months. Salary is £175 per annum.

Applications, stating age, qualifications with dates, and nationality, and accompanied by copies of three recent testimonials, should be sent to the undersigned.

H. B. COATES, Secretary-Superintendent.
3rd August, 1940.

Ancoats Hospital, Manchester, 4.

APPOINTMENT OF RESIDENT CASUALTY OFFICER (B1).

Applications are invited from registered Medical Practitioners for the appointment of Resident Casualty Officer to become vacant on September 14th. Applicants should have held house appointments and those with the primary fellowship diploma preferred. The successful candidate will deputise for the Resident Surgical Officer at alternate week-ends and other scheduled times. Salary £150 per annum, with board, lodging, laundry, &c. Appointment for six months.

Applications, stating age, qualifications, nationality, and past experience, to be forwarded to the undersigned on or before Wednesday, 21st August, together with copies of three recent testimonials.

HERBERT J. DAFFORNE,
General Superintendent and Secretary.

County Council of Durham.

SEAHAM HALL SANATORIUM FOR WOMEN AND GIRLS, SEAHAM HARBOUR.
(80 Pulmonary and 50 Non-pulmonary Beds.)

JUNIOR RESIDENT MEDICAL OFFICER.

Applications are invited from registered Medical Practitioners, Male and Female, for the appointment of Junior Resident Medical Officer (B2) now vacant, including R Practitioners who now hold A Posts. If held by an R Practitioner the appointment will be limited to six months. Otherwise it will be for a period of twelve months. The salary is at the rate of £200 per annum, with full residential emoluments.

The appointment will be subject to the regulations for the time being of the County Council relative to the payment of salary in the case of sickness.

Applications, stating age, qualifications with dates, nationality, and present post, and accompanied by copies of three recent testimonials, should be sent to the County Medical Officer of Health, Shire Hall, Durham, not later than Monday, 19th August, 1940.

J. K. HOPE, Clerk of the County Council.

Shire Hall, Durham, 5th August, 1940.

City of Manchester.

WITHINGTON HOSPITAL. (1150 Beds.)
(Recognised under the Regulations for the F.R.C.S.)

(1) APPOINTMENT OF RESIDENT ASSISTANT SURGICAL OFFICER (B2).

Applications are invited from registered Medical Practitioners, Male and Female, for the above appointment to become vacant on 8th September, 1940, including R Practitioners who now hold A Posts.

The salary is at the rate of £250 per annum, with full residential emoluments.

(2) APPOINTMENT OF RESIDENT ASSISTANT MEDICAL OFFICER (A).

Applications are invited from registered Medical Practitioners, Male and Female, for the above appointment to become vacant on 1st September, 1940, including R Practitioners within three months of qualification.

The salary is at the rate of £200 per annum, with full residential emoluments.

Both appointments will be limited to six months if held by R Practitioners. Otherwise they will be for a period of twelve months.

These appointments are subject to the Manchester Corporation conditions of service. Full information and forms of application may be obtained from the Medical Officer of Health, Hospitals Administration Section, Box No. 399, Town Hall, Manchester, 2, and applications for the posts must be received by him before 26th August, 1940.

Canvassing in any form is prohibited.

R. H. ADCOCK, Town Clerk.

Town Hall, Manchester, 2, 5th August, 1940.

Preston and County of Lancaster

ROYAL INFIRMARY

APPOINTMENT OF CASUALTY OFFICER.

Applications are invited from registered Medical Practitioners, Male and Female, for the appointment of Resident Casualty Officer (B2) to be vacant shortly, including R Practitioners who now hold A Posts. Six months' appointment. Salary at the rate of £150 per annum, with full residential emoluments.

Applications, stating age, qualifications, nationality, and present post (if any), accompanied by copies of three recent testimonials, should be sent to the undersigned as soon as possible.

JOHN GIBSON, Superintendent and Secretary.

Royal Infirmary, Preston.

Royal Berkshire Hospital, Reading.

TEMPORARY HONORARY ASSISTANT ANÆSTHETIST.

The Board of Management invites applications for the above appointment.

Candidates must be fully qualified and registered. The selected candidate will be appointed for the period ending on the third Tuesday in January, 1941, and will be eligible for re-election.

Canvassing by or on behalf of a candidate will disqualify him.

Applications, accompanied by not more than three testimonials, should be addressed to the undersigned and reach him not later than the first post on Friday, the 16th August.

H. E. RYAN, Secretary and House Governor.

Royal Berkshire Hospital, Reading.

Applications are invited from registered Medical Practitioners (Male), including R Practitioners within three months of qualification, for the appointment of a HOUSE SURGEON (A) to the MATERNITY DEPARTMENT now vacant.

The appointment will be for a period of six months. Salary at the rate of £150 per annum, with full residential emoluments.

Applications, stating age, qualifications with dates, nationality, and present post, and accompanied by copies of three recent testimonials, should be sent to the undersigned immediately.

H. E. RYAN, Secretary and House Governor.

City of Portsmouth.

TUBERCULOSIS OFFICER AND SENIOR ASSISTANT MEDICAL OFFICER OF HEALTH.

Applications are invited for the above appointment from registered Medical Practitioners having special experience in the diagnosis and treatment of tuberculosis. Previous experience in general public health, and the possession of a D.P.H., are essential.

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The Guildhall, Portsmouth, 29th July, 1940.

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